

American Cinematographer

International Journal of Motion Picture Photography and Production Techniques

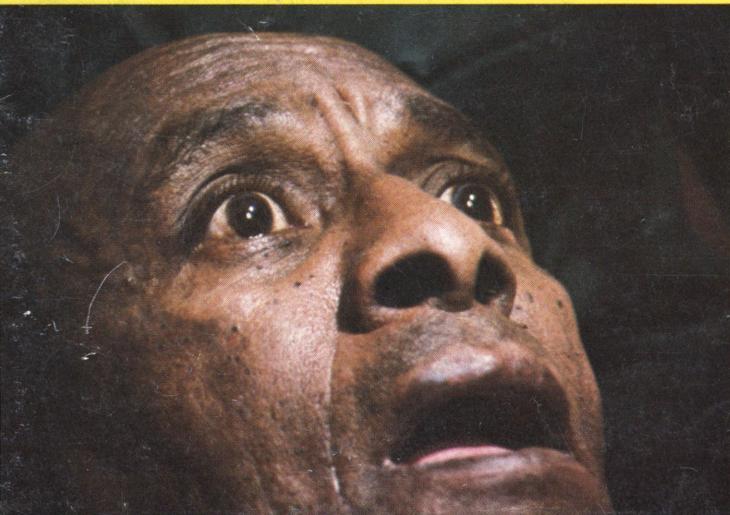
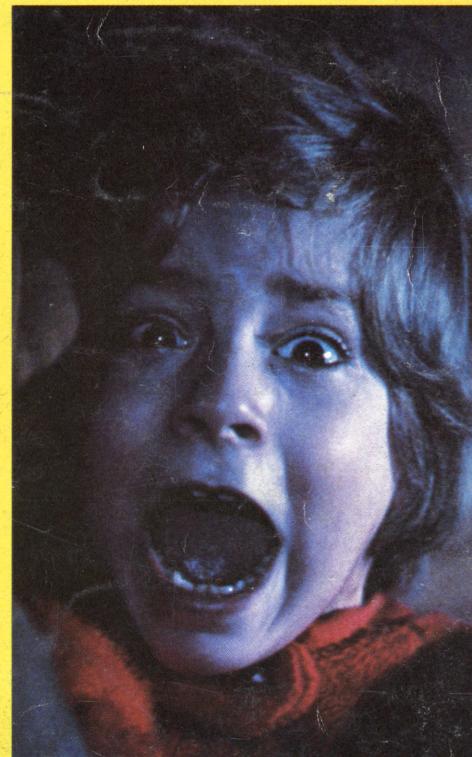
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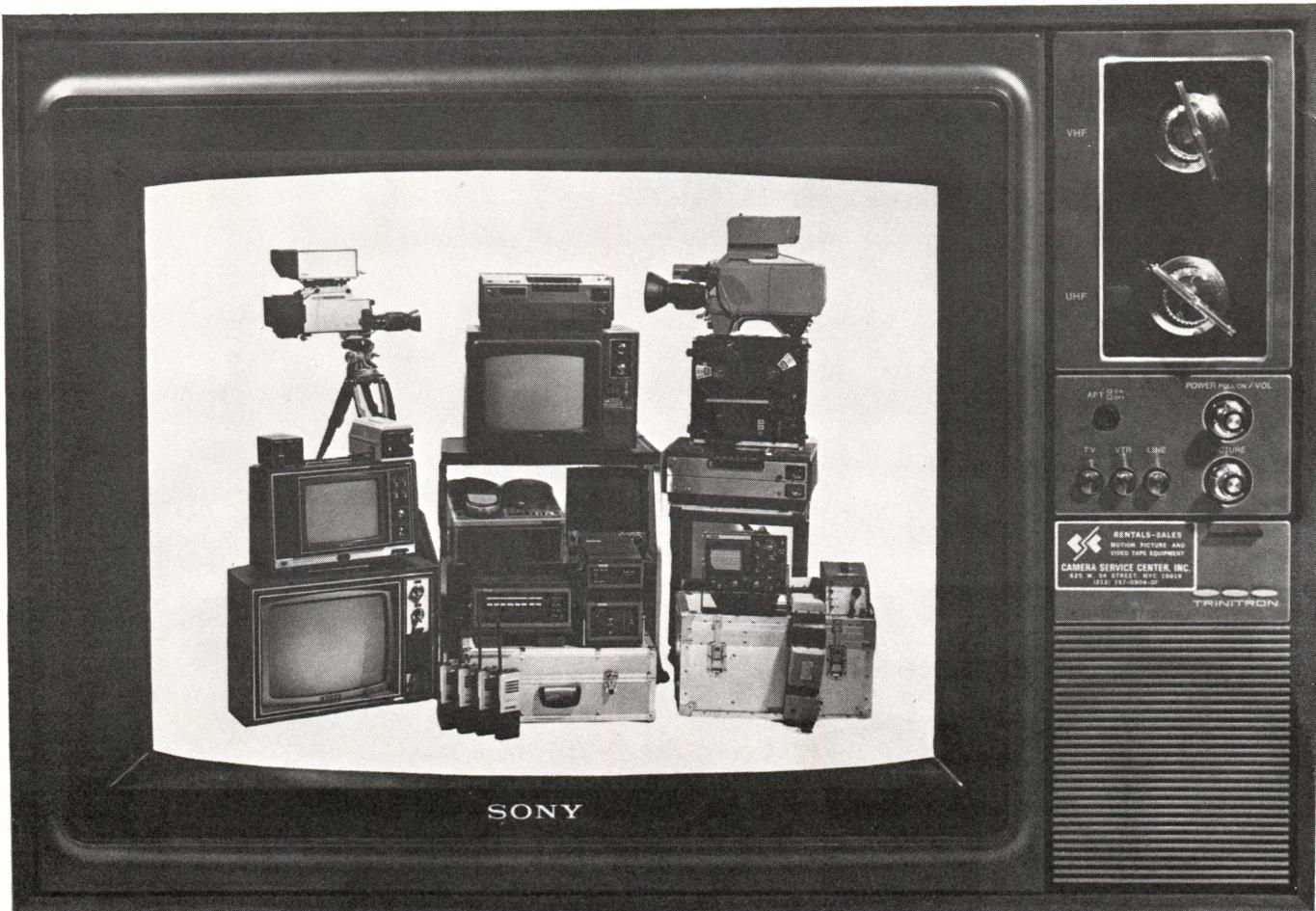


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THE SHINING

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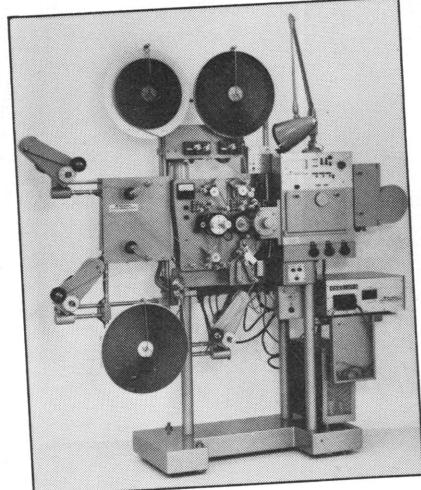
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AMERICAN CINEMATOGRAPHER

International Journal of Motion Picture Photography and Production Techniques

The American Society of Cinematographers is not a labor union or a guild, but is an educational, cultural and professional organization. Membership is by invitation to those who are actively engaged as Directors of Photography and have demonstrated outstanding ability. Not all cinematographers can place the initials A.S.C. after their names. A.S.C. membership has become one of the highest honors that can be bestowed upon a professional cinematographer, a mark of prestige and distinction.

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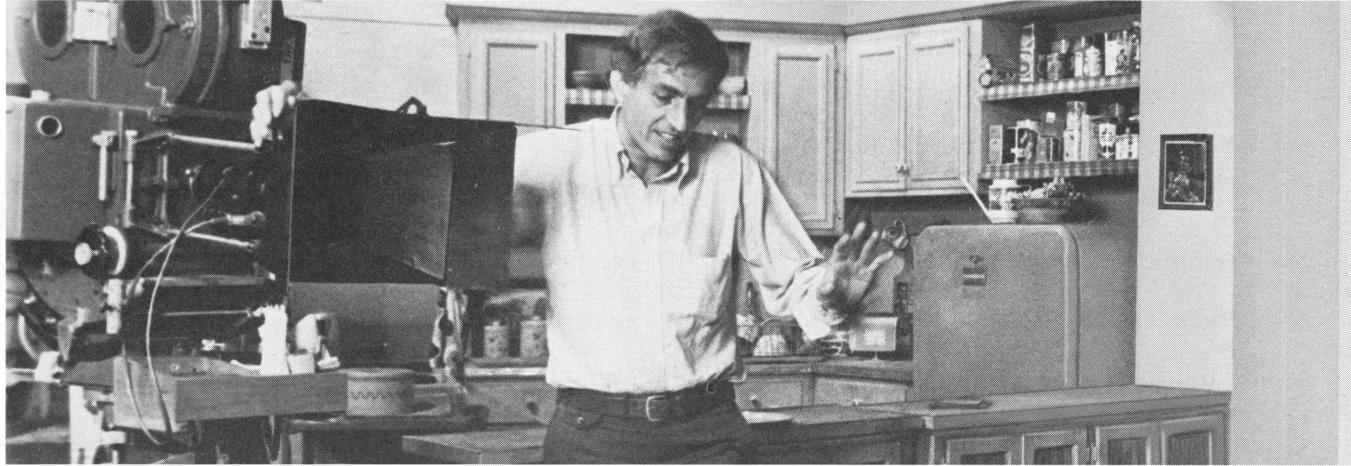
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ON THE COVER: Scenes from Stanley Kubrick's **THE SHINING**, a Warner Bros. release, produced and directed by Stanley Kubrick, adapted from the novel by Stephen King, with John Alcott, BSC, as Director of Photography.

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MARSHALL



"Film is kind to performers."

Few stars on television shine as brightly as those of Garry Marshall, producer of *Mork and Mindy*, *Laverne and Shirley*, *Happy Days*, and *Angie*. Garry credits the stars themselves, the stimulation of live audiences, and a technique of working with not one, but three cameras recording all the comedy subtleties on film at the same time.

"Funny is funny. On television, in a nightclub, in the theater, movies, no matter where, funny is funny. And the key is the audience. You're funniest when you use the audience."

"I use the audience as a barometer. I listen to 300 people, and I can hear whether they laugh or don't laugh; so I don't need subjective opinions about what's funny."

"The three-camera technique gives me the best chance to be funny, because I always have three cameras looking at *everything*. I don't have to pick the very best shot until later in the quietness of the editing room."

Then I can listen to the audience, see where they laughed, and pick the funniest shot. For me it works better than picking the shots electronically as you shoot.

"The three-camera technique involves lots of rehearsal. We're often rewriting up to the very last moment. I have even rewritten lines in front of the audience. I welcome contributions from anybody in my shows, because comedy can come from any place. Many of my cameramen have given me funny lines. Gate guards have contributed. The more creative the atmosphere, the better."

"I think film is kind to performers. It's *much* kinder to women; it makes women look prettier. This may be due partly to the subtler lighting and partly the nature of film. At any rate, my gang is pleased with how the film camera treats them."

"About 86 percent of prime-time television originates on film. The *look* of film may have something to do with this."

"I don't use a laugh track but even using a live audience can be bad. A number of my shows have featured cult heroes; so when a Fonzie or a

Mork makes an entrance, the audience stands up and cheers. That distracts the viewing audience from the story, so we take that out.

"Part of the appeal of series television is *comfort*. It makes people comfortable to see the same familiar faces each week, doing different kinds of things, but remaining in character. It's like having friends. If you make your series a best friend, you can put it in that wood frame, and it will last for seven years."

If you would like to receive our publication for filmmakers, Kodak Professional Forum, write Eastman Kodak Company, Dept. 640, 343 State Street, Rochester, NY 14650.

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WHAT'S NEW

IN PRODUCTS, SERVICES AND LITERATURE



CENTURY PRECISION/CINE OPTICS ANNOUNCES:

A new line of adapters for Arriflex Bayonet Lenses. Arriflex Bayonet mount to: Aaton, Bolex, C-mount, CP-16R, and Eclair.

These adapters are a precision 2-piece construction of high quality stainless steel and aluminum to resist corrosion and wear. They are calibrated to .0005 inch of accuracy to insure uniform fit and they are hard black anodized. Special flat interior paint minimizes internal reflection.

THE NEW LOWEL LIGHTFLECTOR

This medium small unit reflects sun and artificial light. It can fit in most Lowel kits, yet is large enough to provide fill light for two people, head to waist. It can be stand- or clamp-mounted with its Tota-tilter. A constant tension "clutch" provides reliable rotation. Tilting and panning adjustments are precise.

When hand held, the Lightflector can be bowed convexly to reduce brightness and increase the area covered. Slight concave bowing intensifies the light at very close distances.

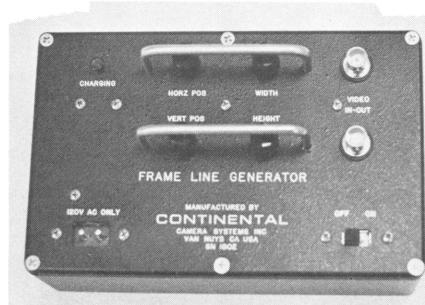
Both sides of the Lightflector are covered with washable, scratch resistant, aluminized Mylar. One side has "texture" to provide a soft, even light pattern. The opposite side is specular. Its extra bright, not very even beam, is intended primarily for bounce illumination.

Though not a substitute for large reflectors (Variflector II) it is ideal for automobile interiors, product shots, close-ups, etc. It can provide fill, rim or accent illumination. When reflecting a light source already in use, it provides additional illumination without additional amperage.

The Lowel Lightflector measures

15" x 24" x 3/8", (39x61x1cm) and weighs just under 2 pounds with its Tota-tilter.

The cost of the Lightflector with its Tota-tilter is \$65.00 (order code LFT), individually the Lightflector is \$48.50 (code LF) and the Tota-tilter is \$19.50 (code T1-36).



NEW FRAME LINE GENERATOR

Until now, video viewfinders for film cameras were plagued by non-readable frame lines in most filming situations. Continental Camera Systems' new Frame Line Generator uses the latest micro-circuits to allow the film cameraman to see a sharply defined, bright, white frame-line that is superimposed on any video viewfinding system. All standard, as well as special, aspect ratios can easily be displayed.

This unique battery or AC operated device is completely self-contained. It features a built-in ni-cad battery and charging system for continuous operation in excess of 20 hours on one battery charging. It also has automatic battery re-charging when AC-operated, and a special circuit for displaying a low battery condition. The units' simple "in-line" or "hang-on" video connections are compatible with any NTSC or random scan U.S. standard TV system. Compact size, the unit is 7 1/2" long, 4 1/2" wide, 2" deep.

The Frame Line Generator is for rent or sale from Continental Camera Systems Inc., 7240 Valjean Ave., Van Nuys, CA 91406. Phone (213) 989-5222.

THE FIRST VIDEO ASSIST FOR THE ARRI III

Otto Nemenz International Inc. announces the introduction of the first Video Assist unit for the Arri III camera.

The unit is an exclusive Otto Nemenz Inc. design and utilizes a Phillips LDH 26 video camera with a lens aperture of

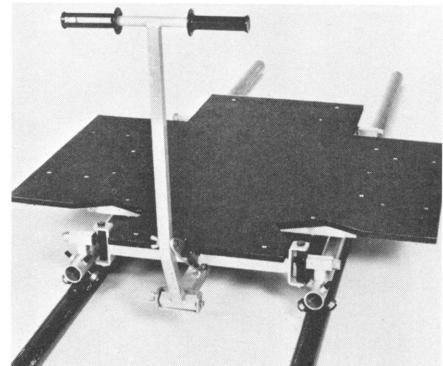
T/2.8 and uses a beam-splitter for minimum light loss.

Weighing 3 1/2 lbs., the unit attaches to a pre-existing access hole, thus requires NO alteration of the camera.

The unit can be installed or removed in 2 minutes or less.

Available immediately for sales and rental.

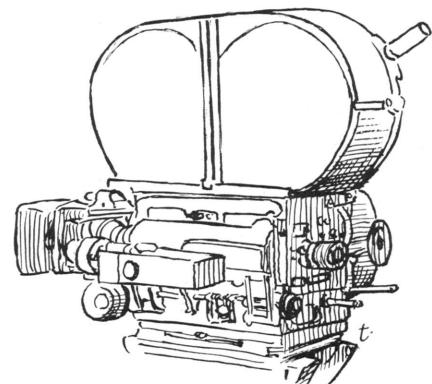
For price and availability contact: Alex Wengert; Otto Nemenz Intl. Inc.; 7531 Sunset Blvd.; Hollywood, CA 90046; (213) 874-0811.



THE JENSEN PORTABLE COMBINATION DOLLY

The JENSEN PORTABLE COMBINATION DOLLY, is a dual purpose dolly, uniquely designed for field or studio production. Its carpeted platform holds camera, operator, and assistant. The detachable side boards allow clearance through 30" doorways. Other features include, a removable handle, expandable rear axles and high resiliency cushion tires, providing smooth rolling over seams or cracks.

The "changeover from steerable to track dolly takes only one minute. As a track dolly, it travels on silent roller bearings, and inexpensive ABS pipe assures smooth rolling. Aluminum and chrome moly steel construction guarantee lightness, durability, and rigidity. Anvil cases are especially designed for travel needs. The price, less traveling cases and shipping is \$1350.00. For additional information or brochure, contact: Jensen Production Services; 438 2nd Avenue West; Seattle, WA 98119; (206) 283-5776. ■



MINICAM-16

... the ideal camera for those unusual action shots.

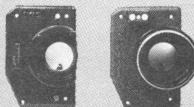
Keep in step with today's fast-moving world with the camera that puts the viewer in the picture, the Alan Gordon Enterprises MINICAM-16. This famous Bell & Howell G.S.A.P. camera has been modernized for today's 16mm action photography. It's the sports cinematographer's delight, ideal for filming unusual angles of skydiving, bike racing, skiing, motorboating and many other action-packed activities. The MINICAM-16 is lightweight, portable and uses pre-loaded

Eastman Kodak magazines in all popular emulsions: 7252, 7242 and 7247. Frame rates are 24 or 48 fps, and a special shutter provides sharp photography under adverse vibration conditions. The MINICAM-16 Model C accepts C-mount lenses, while Model A is available for Arri lenses. Power is 24V DC and the camera is attractively finished in tough Acrylic red, white and blue paint. The camera weighs less than 2½ pounds.



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PRICES

MINICAM-16 C camera body, "C" mount with internal 24VDC motor: 24 and 48 fps	\$425.00
MINICAM-16 A camera body, Arriflex mount with internal 24VDC motor: 24 and 48 tps	\$575.00
"C" MOUNT front plate	\$125.00
ARRIFLEX MOUNT front plate	\$275.00
BATTERY, 24VDC Ni-Cad rechargeable	\$195.00
ADJUSTABLE CAMERA MOUNT with flat camera adapter and 90° camera adapter	\$215.00
BORESIGHT	\$265.00
MINICAM-16 power connector plug	\$ 29.95
MINICAM-16 power cable	\$ 45.00
BATTERY CHARGER	\$ 85.00

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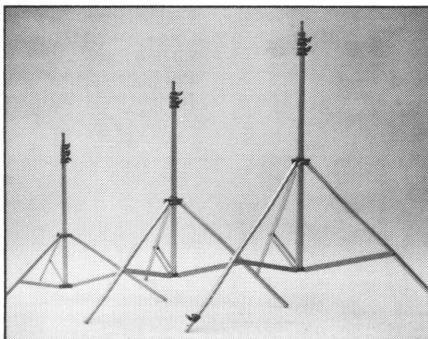


The classic, 5 pound, Lowel KS Stand supports all of our lights, substantially.

We don't take a stand lightly.

In 1967, our remarkable KS stand set new standards for ruggedness, weight (under 5 pounds), ease of operation and safety. Not surprisingly, it has been internationally admired—and imitated. The KS, however has extra thick-wall tubing, high strength, heat treated aluminum, and generously overlapping sections. After thirteen years, it's still the state-of-the-art stand.

Now we offer two additional versions of it: the small Omni-stand, and the



large Grand Stand. Both outstanding. When it comes to issues like high-strength-to-weight-ratios for location equipment—we take a strong stand.

For equipment and kits see an authorized Lowel dealer. For brochures contact us. Lowel-Light Manufacturing Inc. 421 West 54th St., N.Y., N.Y. 10019 (212)245-6744. Telex: 666597UW. West Coast: 3407 West Olive Ave., Burbank, Ca. 91505 (213)846-7740

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Even the best copy
may not be perfect.

Insist on the original.

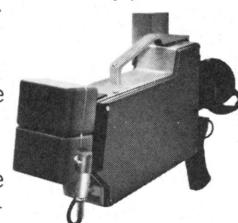
Ever since Cine 60 invented the Powerbelt 20 years ago there have been imitations. And while we're flattered that so many have tried to follow our lead, we'd like to set the record straight. Cine 60, the original, has:

The broadest line of proven products



Cine 60 offers you maximum flexibility, maximum reliability. From our Fast Charge Powerbelts that can be charged in less than an hour, to our light, bright portable lighting kits. On-Board batteries for all popular ENG and EFP cameras. In-Boards for VTR's. Dememorizers to restore "new" battery performance. Car Fast Chargers for recharging from any vehicle. State-of-the-art high frequency chargers that are half the weight and size of competitive units.

Nobody else comes close to Cine 60's record of reliability. Our high value, high performance nickel-cadmiums have logged more hours, powered more cameras, shot more footage



than all others combined. They've proven themselves in the only test that counts - daily use by pros.

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All told, Cine 60 personnel have over a hundred years of experience in working with film and video

pros to give them the products they need. Nobody else knows so much about portable power or the demands you put on it. As a result, you can get whatever technical help you need with just a phone call.

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Readily available parts and service - Coast to Coast

New York, Hollywood or in between, Cine 60 stocks complete parts for all our products.

Trained technicians can rebuild our belts with original equipment quality cells, quickly, economically. Cine 60 also maintains a complete stock of all our belts, packs and related products, from 4 to 20 amp hours.



If you ever need help, one call will get you the belt you want shipped in 24 hours in most cases. That's the kind of instant response that separates the pros in portable power from the rest of the pack.

With all you've got riding on a shot, settling for anything less than the original is a compromise you can't afford.

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THE ARRI ENERGY SET: A battery/charger combination that frees you from worry about overcharging or building a "memory" into the cells.

A compact, lightweight
4AH battery that works with *any*
12VDC camera.

This battery and charger *cooperate* to form the most infallible DC power unit you can buy. For example:

The memory problem.

To avoid building a false capacity "memory" into the nicad cells, a partially discharged battery should be trickle-charged. But most chargers are designed to deliver a fast charge, because trickle-charging a flat battery would take sixteen hours or more.

Automatic sensor.

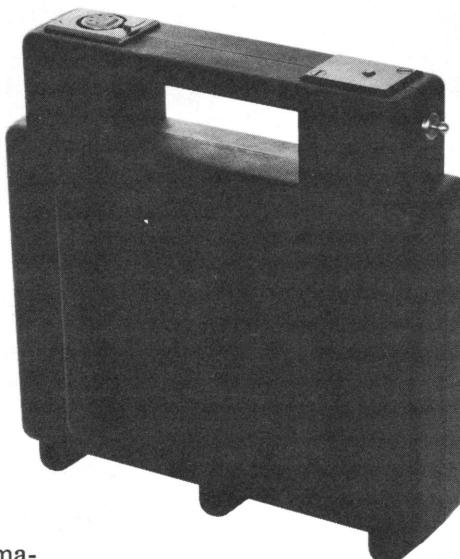
The Energy Set's charger automatically senses the degree of discharge in the battery and gives it the appropriate rate of charge. No danger of creating a false "memory." *You just plug the battery in and forget it.*

No overcharge.

A thermal sensor in the charger also protects against overcharging. And the charger automatically switches to work with 110V/60Hz or 220V/50Hz AC. A red light shows that it's delivering a fast charge; red and green lights indicate a trickle charge.

Portable three ways.

You can carry the battery three ways. It comes with a shoulder-strap that snaps on. And a handgrip and belt loops are built into the case.

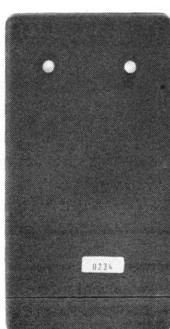


A high capacity battery that weighs only 5 lbs. 1 oz. and measures 7 1/2 x 7 3/16 x 2 3/16 ins.

At 68°F, under typical shooting conditions, the Energy Set battery will drive 6,500 feet of film through the 16SR, 6,000 feet through the 35BL and 4,500 feet through the 16BL or the 16S/B.

Fuse protection.

A resettable circuit-breaker fuse automatically protects the camera's electric circuits against external shorts.



Charger weighs 2 lbs. 11 oz. and is 5 1/2 inches high.

THE ENERGY SET 12V/4AH BATTERY AND CHARGER

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THE BOOKSHELF

By GEORGE L. GEORGE

CINEMA IN PERSPECTIVE

How movies are made—and how they shouldn't be—is shown in *SOON TO BE A MAJOR MOTION PICTURE*, Theodore Gershuny's lovely and detailed report on the filming of Otto Preminger's *Rosebud*. Gershuny, who witnessed the shooting at the director's invitation, re-creates vividly and credibly the production's chaotic progress (Holt Rinehart Winston \$14.95).

In *THE ART OF STAR WARS*, Carol Titelman assembled a stunning array of sketches, paintings, models, costumes and other artifacts used in George Lucas's film. A complete script is also included in this superb large-format album (Ballantine \$17.95/10.95).

Dennis Gifford's expert survey, *THE ILLUSTRATED WHO'S WHO IN BRITISH FILMS*, offers basic data, credits and vital statistics on some 1000 film personalities of Great Britain and the Dominions, covering directors, cameramen, as well as performers, producers and technicians (Gale \$32).

A stimulating and scholarly study of cinematic style, Stephen Neale's *GENRE* assesses the ideological approach to the evaluation of film. In preference to the currently popular structuralist/semiotic methods, he cogently advocates a return to the analysis of cinema as a social institution (N.Y. Zoetrope, 31 E. 12 St., NYC 10003; \$6.25).

A "transformalist" theory of film criticism is advanced by Profs. Beverle Houston and Marsha Kinder, *SELF AND CINEMA*, in an effort to unify current philosophical schools of cinematic theory and thus integrate complex antithetical dynamics stemming from individual movies, their creators and the audience. Application of transformism to various movies provides some startling and meaningful examples (Redgrave \$7.90).

How public opinion is manipulated through the news reporting process is discussed by Anthony Aldgate in *CINEMA AND HISTORY*. Citing the handling by the British newsreel companies of the Spanish Civil War, he evaluates the use of film as historical evidence of socio-political events (N.Y. Zoetrope \$11.95).

★ ★ ★

TALENT ON PARADE

Exploring in *SHORT LIVES* the widely held notion that artists are compulsively self-destructive, Katinka Matson offers as examples James Dean, Marilyn Monroe, Montgomery Clift and others who died young. While the evidence is factual, motivations are less than convincingly adduced (Morrow \$16.95/9.95).

In *FUNNYMEN OF THE MOVIES*, Edward Edelson reviews the films and distinctive styles of early comedians—Chaplin, the Marxes, Keaton, Lloyd et al. He also considers screwball comedies, short subjects, and such contemporaries as Woody Allen, Jerry Lewis and Jacques Tati (Pocket Books \$1.75).

Tony Raynes' collection of essays, *FASSBINDER*, deals with the brilliant and controversial German director whose films manage to infuriate both establishment and anti-establishment groups. These essays examine the factors that motivate Rainer Werner Fassbinder's approach to films and appraise their place in Europe's progressive culture (N.Y. Zoetrope \$8.25).

In *THE MOVIE WORLD OF ROGER CORMAN*, J. Philip di Franco assembles a colorful biography of the producer famous for his low-budget action films. Interviews, anecdotes and facts are expertly blended into a colorful and entertaining book (Chelsea \$17.95).

A superb large-size volume by James Robert Parish and Don E. Stanke, *THE FORTIES GALS* is devoted to seven actresses who achieved stardom in that scintillating era of filmmaking. Lauren Bacall, Susan Hayward, Ann Sheridan, Ida Lupino, Jane Wyman, Virginia Mayo and Esther Williams are extensively portrayed in bio-filmographies and striking photographs (Arlington \$25).

Sidney Poiter's autobiography, *THIS LIFE*, is a remarkable document, far surpassing the usual type of performer's memoirs. Poiter's deep self-awareness, his articulate statement of aims and beliefs, his candid disclosure of intimate feelings and relationships make his book a fascinating mirror of a man in search of himself (Knopf \$12.95).

The widow of Laurence Harvey, Pauline Stone (with an assist by Peter Evans) writes movingly in *ONE TEAR IS ENOUGH* of her life with the mercurial actor, a disarmingly unaffected confession of a troubled intimacy (David & Charles \$14.95).

In a sparkling second installment of her reminiscences, *MORE HAVOC*, June Havoc writes with feeling and humor of her Broadway and Hollywood experience, an unvarnished look at an always precarious road to success (Harper & Row \$11.95).

A liberated lady with a mind of her own, Shelley Winters flaunts in her down-to-earth memoir, *SHELLEY, ALSO KNOWN AS SHIRLEY*, her brash and shrewd ascent from the Brooklyn ghetto to Hollywood and a couple of well-deserved Oscars (Morrow \$14.95).

At age 84, Ruth Gordon is still going strong, as she shows in *AN OPEN BOOK*, a witty and refreshing montage of observations on the performing arts and her own career (Doubleday \$11.95).

In *TALLULAH, DARLING*, Denis Brian paints a perceptive portrait of the irrepressible Bankhead, effectively digging deeper than the usually superficial biographies of unconventional actresses. Brian spoke to 150 of her friends and interviewed the actress shortly before her death (Macmillan \$11.95).

★ ★ ★

FILMS IN PRINT

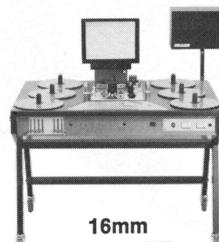
A 1950 classic now published in screenplay form, *THE ASPHALT JUNGLE* was the first film to depict factually the planning and execution of contemporary crime. Tensely directed by John Huston and dramatically photographed by Harold Rosson, it started a new trend in movie realism (So. Illinois U. Press \$15/6.95).

An adaptation by Richard J. Anobile, *THE OFFICIAL ROCKY HORROR PICTURE SHOW MOVIE NOVEL* is a dialogue and frame-by-frame rendition of the far-out thriller of that name. A bizarre blend of campy science-fiction and bisexual lifestyle, it has become a late-night show favorite (A&W Publishers \$6.95).

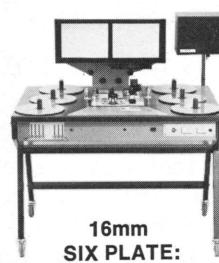
Movie criticism and comment by Stanley Kauffman, appearing between 1974 and 1979 in *The New Republic*, are collected in *BEFORE MY EYES*. A sensitive and knowledgeable reviewer, Kauffman stresses the directorial contribution in his appraisal of the collaborative nature of filmmaking (Harper & Row \$16.95).

A selection of film reviews by the celebrated French novelist Colette, written mostly at the time of World War I, are gathered in *COLETTE AT THE MOVIES*, revealing a surprisingly insightful perception of cinema's visual preponderance (Ungar \$10.95/5.95).

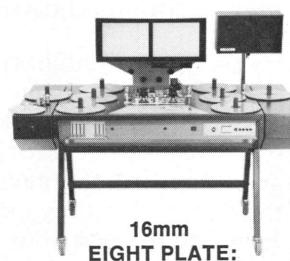
KEM RS-2



16mm
SIX PLATE:
1 PICTURE, 2 TRACKS



16mm
SIX PLATE:
2 PICTURES, 1 TRACK



16mm
EIGHT PLATE:
2 PICTURES, 2 TRACKS

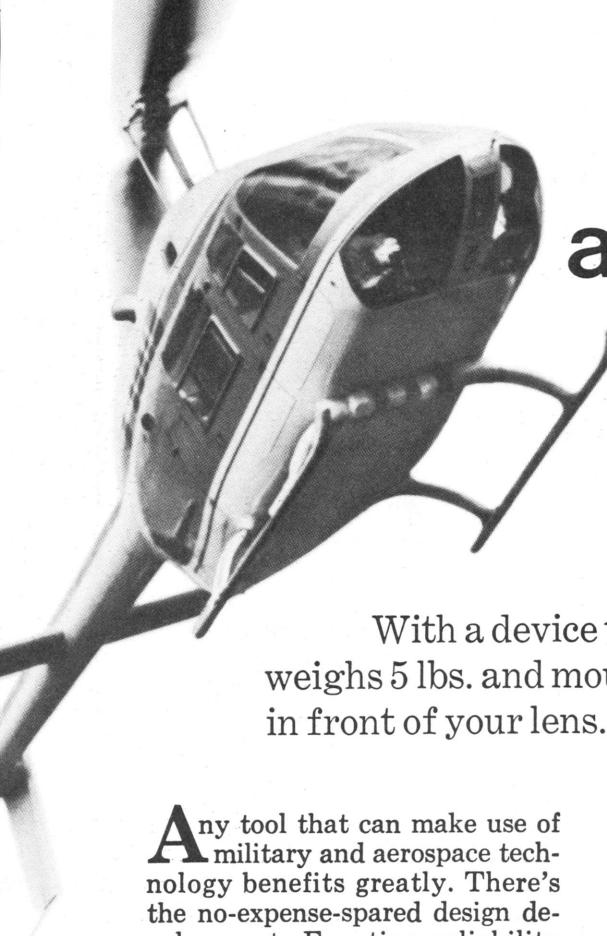
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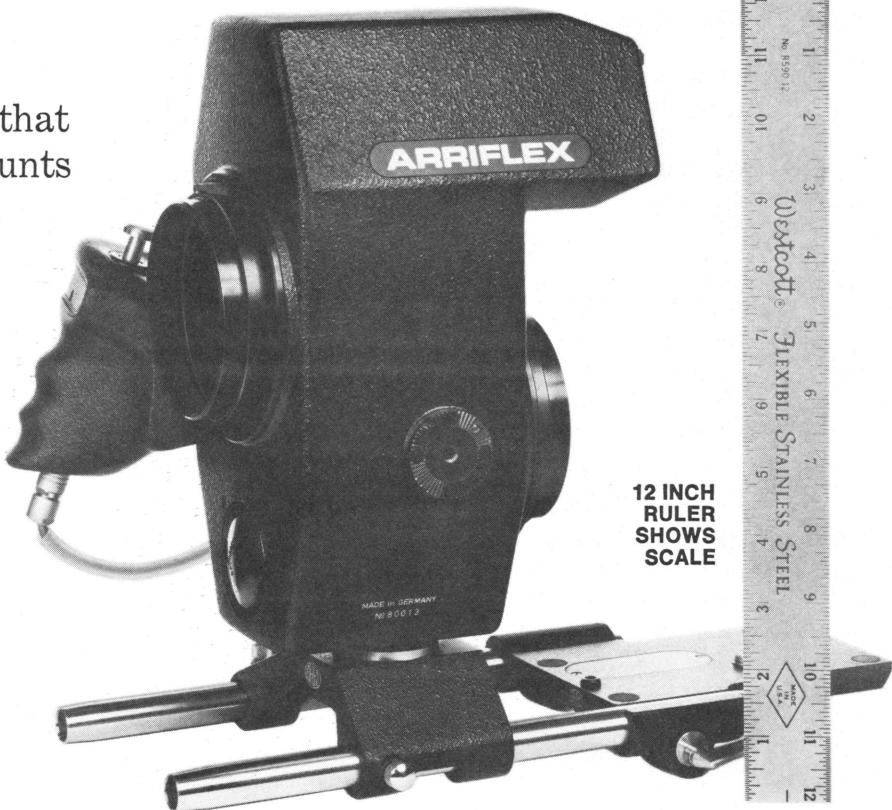
No special training needed. It's just another (astounding) accessory.

The Image Stabilizer comes with its own Support Plate and Bracket. You mount your camera on the Plate and position the Stabilizer in front of your lens. Switch on the Stabilizer. Switch on the camera. Shoot.

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Without stabilization in a helicopter, you can't go longer than about the 50mm focal length on a 16mm camera. With the Image Stabilizer, you can get smooth footage at 150mm or more, depending on air turbulence.

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The new Arriflex Image Stabilizer

works with any camera, anywhere.

the Stabilizer vignettes. A small price to pay for effectively getting three times closer. And if you need a panoramic shot, that's easy: Pull the helicopter back — or take the Stabilizer off.

How it works:

The entering light rays are reflected off a front-surface mirror mounted on two gimbals powered by a battery-driven gyroscope. The mirror is effectively floating in space, as though on two trapezes — one oriented N-S, the other E-W. The image from this

mirror is reflected onto another (fixed) mirror and thence into the camera's lens.

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A gyro's directional stability makes it resist off-axis movement — such as panning the camera. If you insist, it tumbles in that direction. British Aerospace, the designers, have turned this tendency to advantage. A precession brake causes the gyro to *lean with* the panning motion, steadily. This is military aerospace technology, ingeniously adapted.



The British Aerospace Steadyscope uses the same stabilization method.

Above: surveillance from a NATO army helicopter.

British Aerospace is a company very much involved with high-precision technology. Military missile systems, orbital satellites...

One of their products is the Steadyscope. It uses the same gyro-stabilization as our Image Stabilizer, whose moving parts are also made by British Aerospace.

How well does it work?

In the November 16, 1978 issue of the British magazine NEW SCIENTIST, there's an article by Guy Parker on stabilized binoculars. Referring to the Steadyscope, Mr. Parker writes:

Anchored in space

"On pressing the uncage button there is an immediate transformation which is both psychological and optical. The impact is of course greater if one is being shaken in a helicopter, but even on land the image appears in an almost uncanny way to anchor itself in space, even if the instrument is deliberately jiggled about."

Detail resolution

"An optical phenomenon now becomes apparent," writes Mr. Parker. "After the initial pleasure at the disappearance of jitter, the eye seems to demand needle-sharp resolution, now that the visibility of detail is determined mainly by the quality of the optical design. *There is no future for a stabilizer which does not give the highest resolution under all conditions of use.*"

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STABILIZER SPECS:

Length (Image Stabilizer alone): 6 5/8 ins. Width: 4 11/16 ins. Height 9 1/4 ins. Weight (Image Stabilizer alone): 5 lbs. Weight on Support Plate with 9 1/2 in. rods and cable-release handle: 7 lbs. 4 oz. Maximum accelerative force: 6g. Warmup time: 15 seconds. Diameter of entry and exit ports: 76mm.



Rear view of Image Stabilizer shows Support Plate with threaded camera mount. Custom brackets are available for various cameras. Stabilizer can be removed from camera in less than two minutes.

No light loss, no image degradation.

There are no lenses, liquids or prisms in the Stabilizer. Light rays pass through optical flats front and rear, and reflect off two front-surface mirrors. The light at the exit port measures the same as the light entering.

Doesn't perform miracles. Does work in a car, though.

The Stabilizer is for making shaky shots smoother, *not* for simulating a rock-steady tripod. Thanks to its low mass, you don't have to wrestle with unwieldy g forces inside the moving helicopter. That's useful in a car, too, of course. And you can get out of the car with the Stabilizer on your camera, and continue shooting hand-held. (It's quiet enough to shoot sync sound out of doors at typical telephoto distances.)

Proof of low mass space hardware sophistication: a gyroscope powered by one D cell flashlight battery.



To improve a gyroscope's effectiveness, you can increase either its mass or its RPM. For military purposes, British Aerospace had to make it small, light and efficient.

High speed with low mass requires exact dynamic balance, of course. Eccentricity and bearing friction would impair accuracy and soak up power. One measure of the phenomenal precision of this machine: The gyroscope—with its double gimbal and mirror—will run about four hours on a 1.5 volt D cell!

Low mass saves money.

A low mass device is likely to be compact. With this one, you can rent a 5 place helicopter at \$300 an hour, and get steady shots *from inside*. No need to hang out of the open door, where the wind buffets the camera. And no need, either, for a 7 place helicopter at \$400 an hour, or more.



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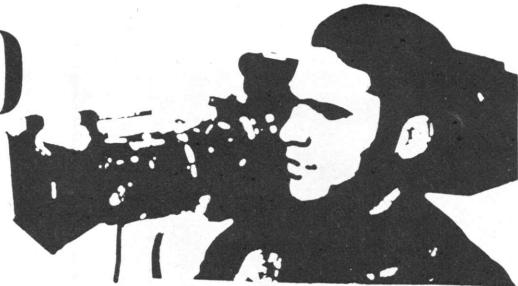
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MOTION PICTURE EQUIPMENT SINCE 1917

CINEMA WORKSHOP

By ANTON WILSON



INSTANT PUSH

The video camera is quite flexible and allows the cameraman to retain control over several techniques that would normally have to be relinquished to the film lab. One of the more simple things that can be done in the video camera is push the ASA. The term "ASA" is really a misnomer when applied to video. However, it does help to draw an analogy between video and film.

I use my Spectra light meters with video in the identical manner that I do with film. It is very simple to establish the ASA of a video camera. Merely illuminate a gray scale step chart and point the camera at it. Adjust the iris for a full video signal; i.e., the white chip just peaking and the medium gray receiving an approximate 50% signal. Note the precise f-stop of the lens at this point. Now place the incident light meter at the chart. With the meter set at 24 fps, rotate the ASA scale until the f-stop noted on the lens aligns with the light meter needle. Whatever that ASA turns out to be, it can be considered to be the effective ASA of the camera for all lighting intents and purposes.

In practice I have found that most current ENG/EFP cameras have an effective ASA of approximately 100-150, making them very similar to film cameras loaded with 5247 Eastman Negative. While this sensitivity is quite sufficient for most applications, there are situations where a one- or two-stop push could come in handy. While this is no big deal

with film, it can be somewhat of an inconvenience. You cannot push only a portion of a roll; the entire roll must be pushed. In addition, a test must usually be done to determine if the increased grain or loss of contrast will be objectionable. In video, on the other hand, pushing is a snap; literally.

The video term for pushing is "gain". Normal exposure with no extra gain would be called "zero(0) gain", "no gain", or just "normal". All video cameras usually employ an external switch (see FIGURE 1) that allows the cameraman to instantly add extra gain, thereby "pushing" his effective ASA to a higher value. Six decibels (6dB) of gain is equivalent to a one-stop push. 3dB is a half-stop, 12dB is two stops, etc. Many cameras employ switches providing 0, +6dB, and +12dB of gain representing normal, push-one and push-two stops respectively. Many of the newer cameras provide switches with 0, +9dB, and +18dB of gain, which provides normal, 1½ and 3 stops of push respectively. It is my belief that the next generation of video cameras will have even greater flexibility by employing switches with finer increments of gain, such as 0, +3dB, +6dB, +9dB, etc., thus providing everything from normal to three stops of push in ½ stop increments.

Combining these switches with the instant viewing capability of video, the cameraman can dial in just the precise amount of gain necessary to achieve the desired exposure. Not only can gain be added in the middle of a roll of tape it can

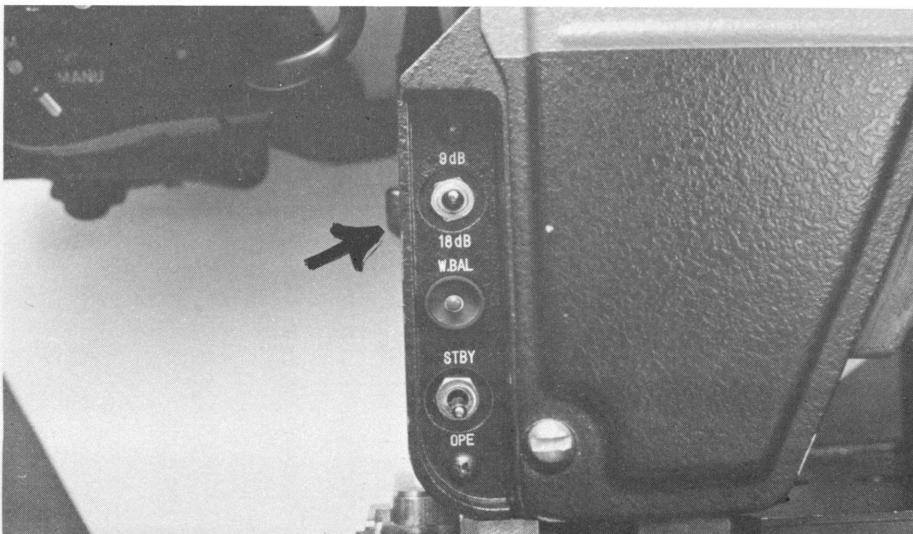
be added in the middle of a shot. On several occasions, while filming a documentary, I found myself following a subject into the proverbial coal bin and have merely added 6dB or 9dB of gain right during the tracking shot, with tape rolling. If the jump in exposure is later found objectionable, it can, of course, be covered with a cutaway.

In production situations the addition of gain can be carefully evaluated on the monitor. As with film there are certain tradeoffs. The video equivalent of grain is "noise" and, as with film, the noise level will increase as gain is applied. The increase of visual noise is roughly proportional to the increase in gain and is also expressed in "decibels". Thus, a one-stop push (+6dB gain) will result in an approximate 6dB increase in noise level. The question is obviously when does the noise become objectionable? As with film the answer is subjective and depends upon many factors. Every video camera has a signal-to-noise ratio indicative of the residual noise or "grain" that is inherent in the normal picture. A very good ENG/EFP camera will have a signal-to-noise ratio of 52dB or better. The new diode-gun tube cameras may achieve s/n ratios of 55dB or better. Such cameras are set to be very "quiet" and can obviously withstand copious amounts of gain better than a cheaper, noisier camera that starts out with a s/n ratio of only 46dB. Thus a quiet late model camera may give a less grainy picture with +6dB of gain than a cheaper or older camera without any additional gain.

One must also consider the tape format. The 3/4" U-matic format is relatively noisy (45dB s/n), compared with the broadcast quality 1" type "C" format (48dB s/n). Thus, the 3/4" tape machine can be the limiting factor. In many instances the difference between 0 gain and +6dB of gain on the best ENG/EFP cameras will be totally unnoticeable when recorded on a 3/4" U-matic machine. On the other hand, these differences will more than likely be discernible when recorded on a 1" type "C" machine.

Whatever the case may be, the quality of the "push" can be instantly evaluated and a decision be made. The process is certainly fast and convenient and the cameraman is in complete control. ■

FIGURE 1—All ENG/EFP cameras have an external "gain" switch. Pictured is gain switch (arrow) on the Ikegami HL-79A. The center position is "off" or "zero gain". The upper position, marked 9 dB, provides a one-and-a-half (1½) stop push, while the lower position, marked 18 dB, provides a three-stop push, which increases the effective ASA of the camera from 125 (normal) to approximately 360 ASA and 1,000 ASA, respectively.





"GSMO's reliability is perfect for the rugged conditions we have to work in: from Lake Placid to the oil fields of Venezuela..."

**Gerry Souter, Senior Audio Visual Coordinator
Motorola Communications and Electronics Inc.**



Since Motorola provided the two-way radios, pagers, and communications systems to the United States team at the 1980 Winter Olympics, Gerry Souter was sent to Lake Placid as a one-man-band required to shoot both stills and motion pictures of the events and Motorola's equipment in use.

"Naturally I looked for the most lightweight, quick-change cassette-load 16mm camera available," says Souter. "GSMO answered my needs in every way, and I was very pleased with the results of my choice."

"During two weeks of shooting, the GSMO was always ready to go. Much of my footage was shot at 64 fps, and the GSMO came up to speed instantly as the slalom skiers and bobsleds zigzagged past. The on-board battery never failed. Not even when the temperatures dipped way down into the teens."

"I had been warned about the difficulties of loading coaxial magazines: how tricky and unforgiving they were if you were a frame off in building your loop. But I found GSMO magazines to be the easiest I've ever worked

with. Simple and straightforward from my first practice roll to the last, which I loaded sitting in the snow surrounded by other photographers cursing broken film and freezing fingers!"

"Neither moisture build-up in the crowded humid buses, nor resting on a plastic bag in the snow while tripods were set up had any effect on the operation of the GSMO or any of its accessories."

"GSMO's reliability is perfect for filming in the rugged conditions we have to work in: from the Winter Olympics at Lake Placid to the oil fields of Venezuela, including steel mills, fire departments, mountain top antenna sites, etc."

"GSMO is the ideal primary location camera for companies like Motorola!"



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The CL42S reaches farther and rejects more ambient noise than any other shotgun of its size ever made. Our exclusive line bypass port makes it more directional at low frequencies so you won't have to sacrifice frequency response when you use it on a boom. Diffraction vanes maintain high-frequency directivity to preserve uniform frequency response if the "talent" gets a little off-mike.

Phantom or AB powered, the CL42S comes complete with windscreens, shock mount, carrying case and handle for hand-held applications. And it's rugged.

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The CH15S is actually more directional than a mini shotgun mike – in a package that's only 4 inches long that weighs less than 6 oz. Specially designed for boom and fishpole use in TV and motion picture studios, but equally at home wherever working space is small and you have need for a compact, highly directional microphone.

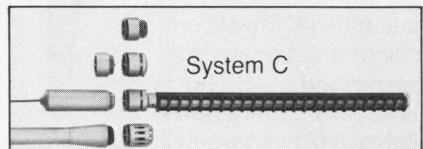
Compatible with phantom or AB power, the CH15S comes complete with windscreens, shock mount and carrying case. And, this microphone is rugged.

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Electro-Voice backs up these two microphones with the only unconditional warranty in the business: for two years we will replace or repair your CL42S or CH15S microphone, when returned to Electro-Voice for service,

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We can do this because we build these microphones to meet our standards for performance, ruggedness and durability. We accept nothing less, and if you're a professional, buying a professional quality microphone, you shouldn't either.



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1980 AD

Georges Hofer, Cameraman (Swiss Aäton agent)

The film medium will not have the stability over centuries that Cheops has had...

AATON

But, in the last 50 years, the essential characteristics of 16 and 35 mm film standards have not changed.

Contrary to video, film owes its uniqueness to the fact that it is visible, comprehensible to the naked eye without the intermediary of decoding equipment : it is a «natural» medium. Film can be cut, intercut, recut, and edited by hand. This inherent «transparence» is at the root of **film's universality**, and of course of its non-obsolescence.

Because film is by definition transparent, it is logical then that any improvement to the film system should retain the **natural readability** of the medium. So when it came to adding a time address to the film, Aäton chose what filmmakers interpret most easily : clear **letters and figures**.

In 1968, Jean-Pierre Beauviala, a young professor of electronics (and later founder of Aäton) took out patents on an ingenious system that would allow **clear arabic figures** to be exposed between perforations as the film passed over the gate in a 16 mm camera. The camera would be instructed by a master clock, so that each second a complete address including time indication to the second would appear on the film edge. The same master clock would insert the address and time indication into a standard Nagra III. Thenceforth, every second of film and tape would contain a complete set of information, and could be matched together with absolute accuracy.

The essential point was to make a system as clear and simple as possible : the intended user was the **independent cameraman**. The choice of any coded system was out : too expensive to buy decoding equipment, modify editing tables, etc. The choice of an alpha-numeric system was natural. The user had to be able to «**read**» with the **naked eye** without depending on complex and expensive machines.

CTR

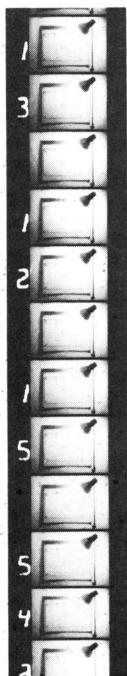
Not only were we there when it all started, but we started it all :
Clear Time Recording

In 1977, Aäton elaborated on the basic ideas of J-P Beauviala's clear figure invention (intended to keep to a minimum the modifications to existing sound recorders and editing tables) and presented in London a working system of Clear Time Recording, based on extensive use of **micropocessor technology**. This was a first in the industry.

And in 1980, another improvement has been brought to the system : to the clear figures have been added letters — **words**. The filmmaker now finds himself with a complete system on film, audio tape, and paper. **PAPER ?**

Words and numbers on the edge of the 16 mm film *projected during exposure*. Words and numbers on the perforated 16 mm magnetic tape *printed in white during transfer*.

Words and numbers on paper : a **daily printout**. At the end of each day, a small module retrieves from each camera and sound recorder the times and durations of all takes. The module is then connected to a mini-calculator printer to supply a cross-referencing document.



1977 NOVEMBER 13

CAMERA NO. 02

TAKE 1

START 12H 15M 54S

STOP 12H 17M 30S

DURATION: 1M 36S

TAKE 2

START 12H 20M 32S

STOP 12H 25M 18S

DURATION: 4M 46S

Film, tape and paper : the date was November 13, 1977, time 12:15 54 and after.

Contrary to a popular myth circulating in the industry, Clear Time Marking is **not wildly expensive**. The rumour of high cost can be attributed to the complexities of the European Broadcasting Union choices, which Aäton has not espoused. On the contrary, the Aäton CTR has the advantage of requiring a strict minimum of new equipment and modifications, and uses an international signal standard (ASCII computer interchange).

Last year, the Swedish TV co-produced a film on the ABBA pop group : six Aätons shooting over a five night period. Tomas Dyferman, Technical Director of the film, felt that the use of Aäton CTR not only greatly facilitated the shoot itself (i.e. no more wasted footage after clapper; clear indications on TV monitors at all times, etc.) but also **cut the post production time in half**. That is where the saving is.

Time is of the essence.



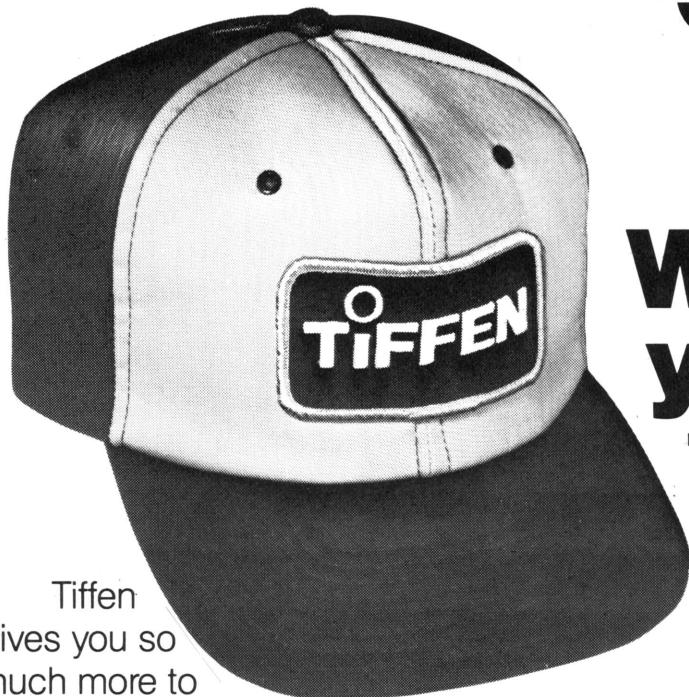
Rune Ericson, Cameraman (Swedish Aäton agent)

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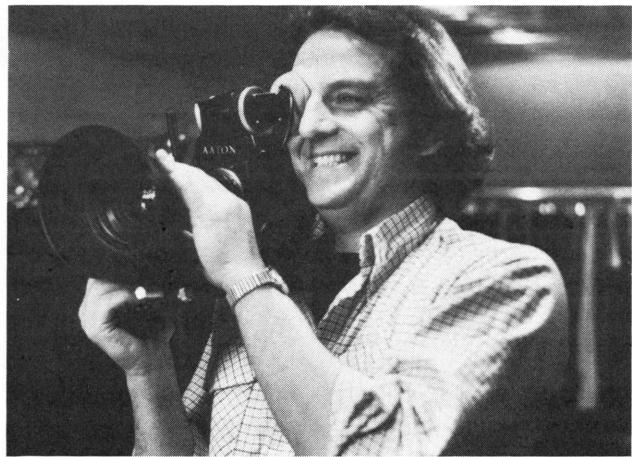


Dave Grubin on-location for "The World of David Rockefeller," the 90-minute documentary he produced for WNET's "Bill Moyers' Journal."

"The design of the Aäton LTR 16mm isn't just beautiful... it's thoughtful, too. They must have spent years analyzing the features active cameramen need. It's amazingly lightweight with a low silhouette and perfect balance, so it nestles softly and naturally on my shoulder. And it stays comfortable all day. I chose Aäton because it's as professional as you can get. And that's why I go to Zellan Enterprises for sales and service."

Greg Cooke filming another "60 Minutes" segment with his distinctive "shoot-from-the-hip style" of cinematography.

"60 Minutes is gutsy photojournalism at its rugged best, and the Aäton is making it even more exciting. The whisper quiet mechanism lets me film interviews unobtrusively in intimate settings. Outside, I can shoot comfortably holding the Aäton out of sight by my hip or balanced just by the carrying handle. And its engineering is as reliable as it is advanced. I brought the Aäton along as my sole camera to a shoot in the Saudi Arabian desert. It was like being in a sandblasting machine, but the camera held up perfectly."



Chuck Levey shooting a segment of CBS' "30 Minutes." Other assignments from the network include "60 Minutes" and CBS Reports.

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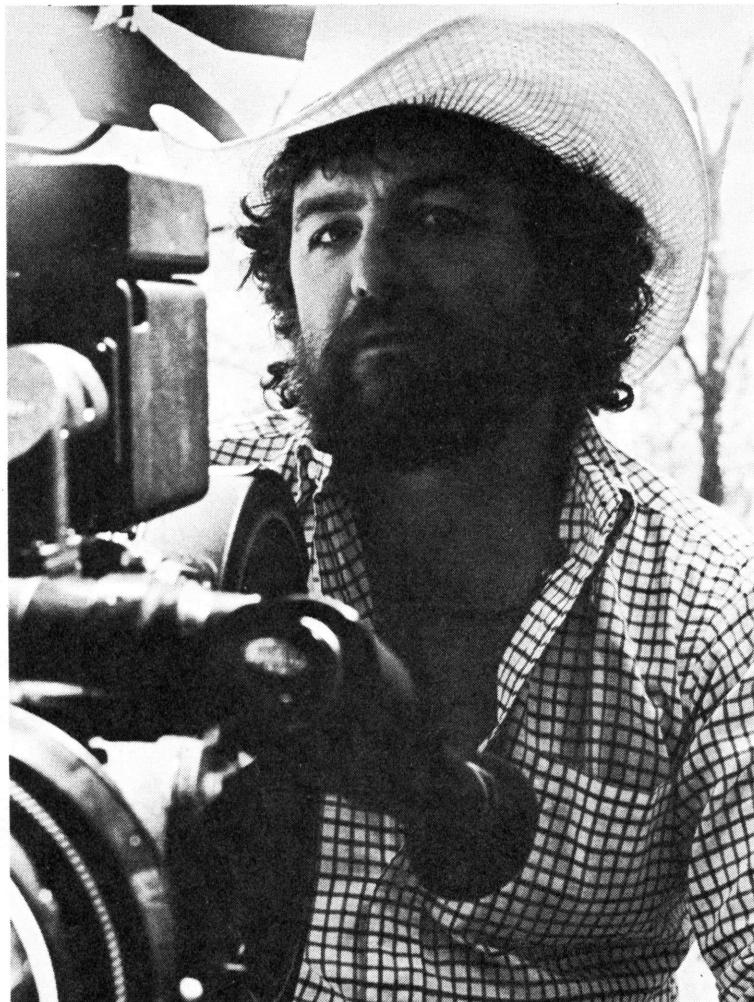
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PHOTOGRAPHING STANLEY KUBRICK'S



Lighting the sets for a huge hostelry with mainly practical lights created a special challenge, but also offered several advantages

THE SHINING, a Stanley Kubrick Film and Warner Bros. release, currently playing the screens of the world, is based on the best-selling novel by Stephen King. It was produced and directed by Stanley Kubrick from a script written by himself and Diane Johnson.

THE SHINING was photographed by John Alcott, BSC, who says that Kubrick "gave him his first break" on 2001: A SPACE ODYSSEY by asking him to carry on as cinematographer when the picture's Director of Photography, the late Geoffrey Unsworth, BSC, had to leave the production after six months in order to fulfill another commitment. The two men have since worked together on A CLOCKWORK ORANGE and BARRY LYNDON, for which Alcott received the 1976 "Best Cinematography" Academy Award.

In the following interview, conducted by *American Cinematographer* Editor Herb Lightman recently in New York, where John Alcott was at work as Director of Photography on FORT

APACHE, Alcott discusses in detail the challenges and techniques involved in photographing THE SHINING.

QUESTION: Starting from the beginning, can you tell me how much pre-production planning time you had for your assignment as Director of Photography on THE SHINING?

ALCOTT: Stanley Kubrick gave me the book to read about ten months before we were to start shooting and, although I had several other shooting assignments in between, this gave me time to be constantly in touch with him and check on the situation regarding the set that was going to be built—whether it should contain ten windows or only five windows, whether the fireplace should be located in one part of the room or the staircase in another—which proved to be a great asset for me in developing a visual concept for the film. This kind of direct contact prevailed throughout pre-production and I would always make a point

of visiting him whenever I was back in England in order to see how the set construction was progressing.

QUESTION: Did you have a chance to study sketches or renderings of the sets before construction began?

ALCOTT: What we did at the very beginning was to have all of the sets built in the form of cardboard models. They were painted in the same colors and had the same scenic decor as we intended to use in the film and I could actually light them. With this concept of using artfoam cardboard models I could light the set with ten windows and then with five windows and photograph it with my Nikon still camera, using the same angle we would use with our motion picture camera. That would give us some basic idea of how it was going to look on the screen. We went all the way through the film like that, even for the sets which were built perhaps two months after we started shooting. All of the major sets—the hotel lobby, the lounge, Jack's apartment, the ballroom and the maze—were built in model form first, so I was able to do some careful planning. By this time we were probably about four months from our starting date and I would make it a point to visit the sets at least once a week, even though I had other commitments. Meanwhile, my two gaffers, Lou Bogue and Larry Smith, were doing the enormous amount of wiring necessary for the sets.

QUESTION: Do I understand correctly that most of the lights used for the photography were actual practicals in the sets?

ALCOTT: Yes, the lights were wired as actual practicals. They were part of the hotel. The gaffers started their work about four months prior to shooting because there was an awful lot of internal wiring to be done, and I would check at least once a week to make sure everything was going fine. They had to wire a great many wall brackets and chandeliers. For example, in the main lounge and the ballroom there were 25-light chandeliers which contained FEP 1000-watt, 240-volt lamps (the same lamps that are used in the Lowel-Lights). Each five of the lamps were connected to a 5 Kilowatt dimmer, so that I could adjust every chandelier to any setting I wished, and this was all done from a central control board outside the stage. The service corridors, which were outside the hotel lobby and the main lounge, were all lit with fluorescent tubes.



Two views of the main lounge of the mythical Overlook Hotel, principal locale of Stanley Kubrick's film version of *THE SHINING*, a Warner Bros. release. The huge chandeliers and wall brackets provided the exposurable light which John Alcott used in photographing this horror story. Two gaffers and an army of electricians spent four months wiring these sets as they would have wired an actual hotel. It was necessary to rule out floor lights and conventional overhead lighting because of extensive use of the Steadicam.

QUESTION: Fluorescent lighting always presents its own special set of problems. How did you cope with those?

ALCOTT: Because the humming of the fluorescent tubes does indeed create a problem, all of the controls and ballasts and transformers were taken outside into the corridors of the studio, so there was no sound problem whatsoever. But this called for another great wiring job, because every tube had to have two wires going up and two wires coming back again. However, at least we eliminated the humming. We had no color temperature problem because the fluorescent tubes we were using were the Warm White Deluxe Thorne tubes, the ones which I've found in all my tests that come closest to matching incandescent lighting at 3200°K. In America I use the General Electric equivalent of these tubes.

QUESTION: You mentioned that the dimming of the practicals was controlled from a central board outside the stage. Can you tell me how this worked out during actual shooting?

ALCOTT: They were all on dimmers on the board and I could control the whole

situation by remote control through the use of a walkie-talkie. This was especially convenient for the Steadicam shots—and there were an awful lot of them. I could change the light settings of the chandeliers as the Steadicam was traveling about the set simply by talking to the control room. This happened in several instances and it was a great help.

QUESTION: The main lounge of the Overlook Hotel, which was built inside a huge sound stage at EMI Studios in England, nevertheless had very large windows which seemed to face the outdoors and let in a great deal of diffused "exterior" light. Can you tell me how you achieved that lighting effect?

ALCOTT: Creating that exterior lighting was quite a project. We had the Rosco people make up an 80- by 30-foot backing of one of the Rosco materials which had the diffusing quality of tracing paper. They welded together the sections of material to give us this complete one-piece backing. The set for the lounge had a kind of small terrace outside with trees behind it. Then came the backing, and behind the backing there were

mounted 860 1000-watt, 110-volt Medium Flood PAR 64 lamps. That was a lot of lamps and a lot of light—and a lot of heat! I mean, you just couldn't walk from one end to the other between the lights and the backing. You just couldn't make it.

QUESTION: How were the lights mounted?

ALCOTT: They were mounted on 40-foot tubular scaffolding and they were all built upright and placed at two-foot intervals. Each lamp was on a pivoted ball-bearing mount and they were all linked together, so that I could vary the light from a control inside. For example, we could start the shot off with the Steadicam pointing in one direction. I could have the light pointing toward me and then, by the time the Steadicam had traveled through the service corridor and around the back of the set and come in again, I could have the lights coming back again. This was possible because all the poles were linked together with one rod. You just turned the handle and the whole bank turned together. I remember going to a meeting and saying to Stanley, "The ideal thing for me would be if the lamps were on ball-bearings."

(LEFT) Shelley Duvall, Danny Lloyd and Scatman Crothers walk through the hotel's vast kitchen. Like several other sets in the film, this one was lighted with Warm White Deluxe fluorescent tubes by Thorne, which are very close in color temperature to 3200°K. **(RIGHT)** Jack Nicholson is illuminated by contrasty light from the bar panels, while ghostly revelers of the 1921 era in the background are bathed in a golden glow coming from troughs of lights reflecting off metallic walls and ceiling.





Director of Photography John Alcott, BSC shown on location during the filming of Stanley Kubrick's *BARRY LYNDON*, which won for him the 1975 "Best Cinematography" Academy Award. (BELOW) Alcott and Kubrick on the set of *THE SHINING*. They first worked together on *2001: A SPACE ODYSSEY* and later did *A CLOCKWORK ORANGE*. They enjoy a uniquely close working rapport.



And he said, "Put them on ball-bearings. If it's going to work, do it." It gave us a terrific advantage, because I could very easily alter the direction of not just the whole bank of lights, but different poles and different parts of the backing, which, again, could turn in one piece. It was a great asset.

QUESTION: Assuming that all of this was worked out well in advance of actual production, how did things change as you approached your shooting date?

ALCOTT: What happened was that when we eventually got the sets built—and some of them were as much as eight weeks in building—I started pre-production full time. This was three to four weeks before we started shooting, which enabled me to basically light all the sets before the cameras rolled. What I did was something that I had never done before: I lit all the sets and shot all my tests with the Nikon camera. I found that I could get around much easier and quicker and I could shoot 36 tests on one roll of film. Whereas, if I'd had a crew and motion picture camera wandering around on sets, it would have taken a lot more time. I did this purely as a lighting test and I could shoot varied tests with the different lighting effects, different settings, less chandeliers, more chandeliers, some on, some off, and so on. I did this continuously with all the sets and I used to view the results the next day. If I didn't like something I could go back and decide on something else. By the time we actually started shooting the picture, virtually all of the sets were basically lit, so there was no kind of lighting that had to be done that hadn't been done beforehand. As I say, I had never worked this way before, but I found it a great help and it left me with much more time than I'd ever had before.

QUESTION: Didn't having almost all of the sets built in advance also add up to a great advantage for you?

ALCOTT: Yes, I was very lucky in that respect. On most pictures all of the sets are not built in advance. They are built, struck and built again. But during the entire filming the sets were up continuously. Therefore, it was simply a matter of going from one set to another.

QUESTION: With so many sets up at one time, how did you keep track of your lighting logistics?

ALCOTT: When I was about to do all of my tests, I had the Art Department make me plans of every set on foolscap-type

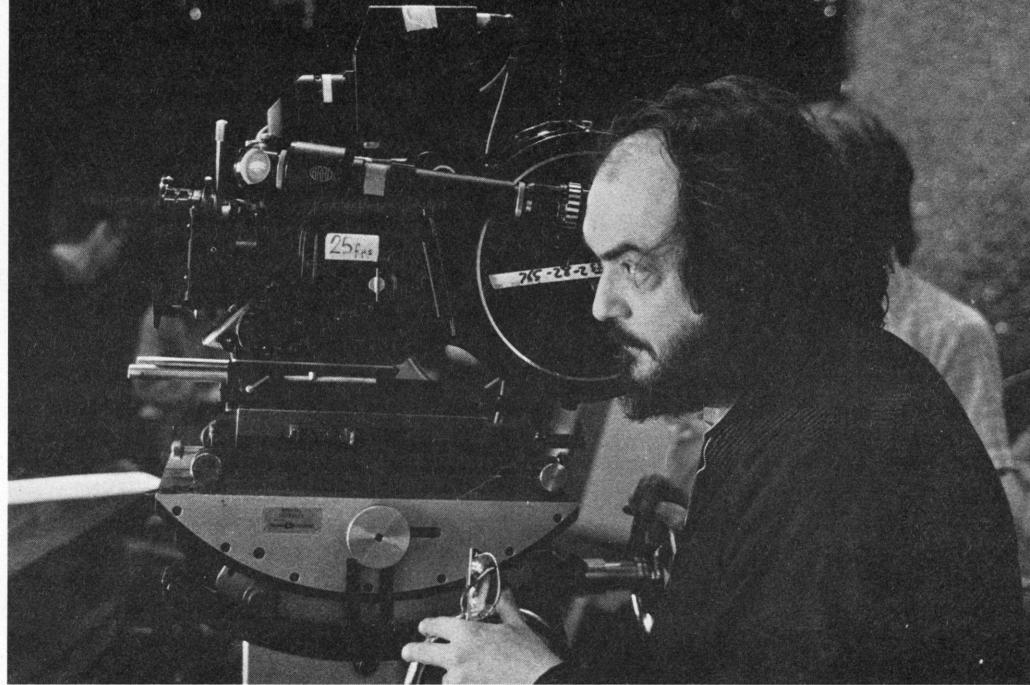
sheets that I could file with all of the lights in the different positions. I could mark them down at the settings I established, so that when I came back to each set I would just give the setting plan to the control room and get them to make their settings accordingly. Then I would go around and check my measurements, because sometimes they weren't always true, but basically they were there and it just meant making a final adjustment here or there to get back to the same situation we had left about two weeks before. Working in that way, I found that I had to make a plan and I had one for probably every slate number I shot. I found it to be invaluable.

QUESTION: How did your lighting plan work with the Steadicam shots?

ALCOTT: Because most of the lighting was done within the set itself, using the practicals, if the chandeliers and light brackets were behind us, I would turn them up to a higher light level than the ones that I was photographing within the view of the camera, then, by the time the Steadicam had come around, I'd have changed the setting, reversed the whole situation. This had to be down on the plan, as well, depending upon whether we were going to come back and intercut something or pick it up somewhere. For example, we had problems with shooting all of young Danny's scenes, because he was only allowed to shoot 40 days out of the whole year. His time was from nine in the morning until four in the afternoon, and if his time ran out we would suddenly have to abandon his shooting and go on to something else. We would come back to it maybe not even the next day. It might be the next week, because it would have been silly to come back and pick up just that one scene and then lose a day of his shooting time.

QUESTION: I noticed when I visited the ballroom set at EMI Studios that the walls were covered mainly with a gold metallic material and the lighting seemed to be almost entirely indirect. Could you tell me about that lighting?

ALCOTT: There were three troughs on either side of the ballroom and in each trough there were 150 100-watt domestic light bulbs. I had those on dimmers, as well, and, again, they were operated from the control room. They were on a 240-volt system, but most of the time I had them dimmed down to 60 or 70 volts, which threw a kind of golden glow and that's the kind of light I used for the sequence when Jack comes into the ballroom and it's all back in the 1921



As a filmmaker Stanley Kubrick is considered to be in a class by himself. Reclusive and a meticulous perfectionist, he is totally dedicated to the art of film. His body of work covers a wide range of subject matter, with no two films being stylistically alike in any way. He is shown here with the Arriflex 35BL camera, his favorite filming instrument.

period. The bar was translucent glass and the back of the bar was lit by 100-watt bulbs which were banked in boxes of 25 to each panel. The band was lit in a special way. For each person playing an instrument I used one Lowel-Light, just to pinpoint them out. In that set I had to rig the chandeliers up high because they reflected back so much from the mirrored surfaces of the walls that, at certain points, they looked unattractive. There were other times when they became very attractive, so I had to make up my mind that in certain scenes they would be on and in other scenes they would be off.

QUESTION: Most of the sets you have discussed have been the huge public rooms of the hotel. What about the smaller sets—Jack's apartment, for example?

ALCOTT: Jack's apartment was lit, again, by fluorescent tubes, the same tubes I mentioned before. And inside all the practicals were wired, again, with the FEP 1000-watt, 240-volt lamps. So basically the rooms of this set, too, were lit by means of the actual practicals, supplemented sometimes with fill. I used to hang a little fill light behind the archway into the bedroom and the small lounge that they had. But basically the illumination came from a top hanging light and the table lamps by the bed and dressing table were actually the practical lights themselves. Again, outside the windows we had a translucent backing with the 1000-watt lamps behind it, but it was a much smaller backing than the

other one—only about 20 by 30 feet.

QUESTION: What about the lighting of the maze?

ALCOTT: The maze was lit by the type of lights that are used for floodlighting in Eight hundred and sixty 1000-watt PAR 64 Medium Flood lamps were used to light the 80-by 30-foot backing outside windows of the hotel main lounge.





garden centers and that sort of thing. They were 1500-watt floods made by Thorne. That sequence was lit solely with those lights, with just a fill running behind. Garrett Brown did all the Steadicam work for us, including all that running around in the maze. I basically tried to place the lights so that everything was always in-picture that gave us a highlight, something which would expose the film properly. Of course, we had the snow all over the maze, which was very bright and gave us a lot of luminosity. I was usually stopped down to T/5.6, and even sometimes T/8 in that maze—and that was normal development. The whole picture was normally developed, which is the first time I've shot a picture with normal development throughout. We wanted depth of field, so it might have seemed logical to force the development, but we had so much light coming through the windows from the backing that I could work at a T/2.8 to T/4 aperture most of the time and that gave us sufficient depth. We weren't quite sure at the time whether it would be a good idea to force the development because of the new stock, but we had made one or two tests and the forcing had added more contrast. So we went ahead with normal development and it worked out just fine.

QUESTION: Can you comment a bit on the use of the Steadicam?

ALCOTT: As I've said, Garrett Brown did all of the work with the Steadicam and it was used a great deal on this picture. It was used for most of the traveling shots you see when the Torrances are being shown around the hotel. For me, seeing the picture all cut together emphasized what a wonderful piece of equipment it is to use in that type of setting. Garrett is the ideal operator for it. Being such a tall man, he can go anywhere, and he seems to be so fit. It's quite incredible. He really is a perfectionist at the art of the Steadicam and I have great admiration for his work. This particular film is a great showcase for the device because the story takes place in a very large hotel and one could only explain it being large and complex by traveling through it, and one could only travel through it the way we did by using the Steadicam. Otherwise, I don't know how we would have done it.

QUESTION: I would say that the kitchen set alone presented a kind of obstacle course for the Steadicam. Isn't that so?

ALCOTT: Yes, the kitchen set was a maze in itself with all that equipment. When one travels through the kitchen in the first sequence there are twistings and turnings in and out amongst the ovens and the kitchen furniture—a kind

of backtracking. I don't think you could find a dolly that could do that. The Steadicam was an ideal piece of equipment in that instance. We used it often in shots where you would have to start off from a very difficult position and continue on to where you perhaps could use a dolly, but Garrett would end up on a composition as precise as anyone could have done it with a dolly and a Worrall head. I must say it was terrific.

QUESTION: How were the shots done of the boy running around in his little racing car?

ALCOTT: That was the Steadicam, with Garrett operating it from a wheelchair. Stanley first had that wheelchair made up for use on *A CLOCKWORK ORANGE*. It has the same basic construction as a wheelchair, but it was designed so that one could place different platforms on it, lie on it, stand up on it, sit on it and do all types of things while it was traveling around the hotel.

QUESTION: The exterior sets, including the rear facade of the hotel and the adjacent maze, were built on the backlot at EMI Studios. Can you tell me what kind of lighting was used for the night shots?

ALCOTT: The lights in the parking lot on the outside of the hotel were ordinary





streetlight-type fittings with 2000-watt quartz bulbs in them. They were far too bright for the camera, but the heat was too intense for any gelatine to take them down, so I had some perforated metal which I could use on the camera side of the lights. If there were a moving camera shot that showed two sides of the light, I would use the perforated metal sheet on two sides of the light. It acted actually as a neutral density barrier, because although the light flared out, it flared out around the metal sheet. In other words, the many holes were flaring into one another and becoming just one bright light—but not as bright as it would have been without the shield. The streetlights that did not show on-camera were left free of the perforated metal shields in order to provide maximum set illumination. They were used for all the exterior lighting except for the lights on the outside of the hotel. I wanted to light the hotel so that it looked weird and mysterious, but, at the same time, wasn't lit by an unknown source. So I imagined that the hotel would have floodlights on it, as most hotels do (especially at skiing resorts)—at the same time lighting it up, but not making it look too pretty. Then I also used smoke for the night exteriors, which again gave it a more mysterious look and softened the lights so that they weren't so contrasty. The result was a kind of glow that was in keeping with the film itself, and especially the attitude of

the hotel, as well. Although I used smoke, the intention was not to produce the effect of fog, but of cloud.

QUESTION: What kind of camera equipment did you use in photographing *THE SHINING*?

ALCOTT: Again, on this picture, we used the Arriflex 35BL. We had one of them that was used solely for shooting as our main camera, and the other one was geared up for Garrett Brown to use on the Steadicam. He used that 35BL the whole time throughout the picture. The only time he used the Arriflex 2C was for the running shots in the maze. It was very difficult running in all that snow, which was actually a layer of salt and polystyrene about a foot deep. The Arri 2C made it much easier for him.

QUESTION: What kinds of filters did you use in shooting *THE SHINING*?

ALCOTT: I didn't use any filters on this film, because it was supposed to look different. It was supposed to have a hard look to it and it needed a lot of contrast. There was supposed to be no attractive softness about it. The daylight was soft, of course, and the windows just naturally flared a bit, but without the use of the low contrast filters which I'd used on previous productions. In the sequence where Shelley finds out that Jack has been typ-

ing not a story, but the same phrase over and over, it was supposed to be early morning and I wanted to create a kind of mistiness to suggest the early morning effect. That was the only time I used smoke within the set, except for a very slight amount in the ballroom sequence, when Jack goes in and finds the whole crowd there.

QUESTION: Did you order corrected or one-light dailies on this film?

ALCOTT: All the dailies were printed on one light, not so much because we didn't want them graded, but because I'd already decided during our testing period what type of printing lights I wanted. Therefore, I thought it best to stick to the one-light system, because then, if something was a bit off, I could tell whether it was anything to do with me. Most times, in a situation where I am working on location, I like the laboratory to correct for me, because I'm usually working with mixed light or light from a source that is out of control altogether. In such a case, I like to see how the laboratory handles it. But in a studio situation like this it was much better for me to have control over the laboratory and know that the printing lights that had been chosen were continued all the way through. Then, if something wasn't right, I could alter it the next day—two points here or two points there.

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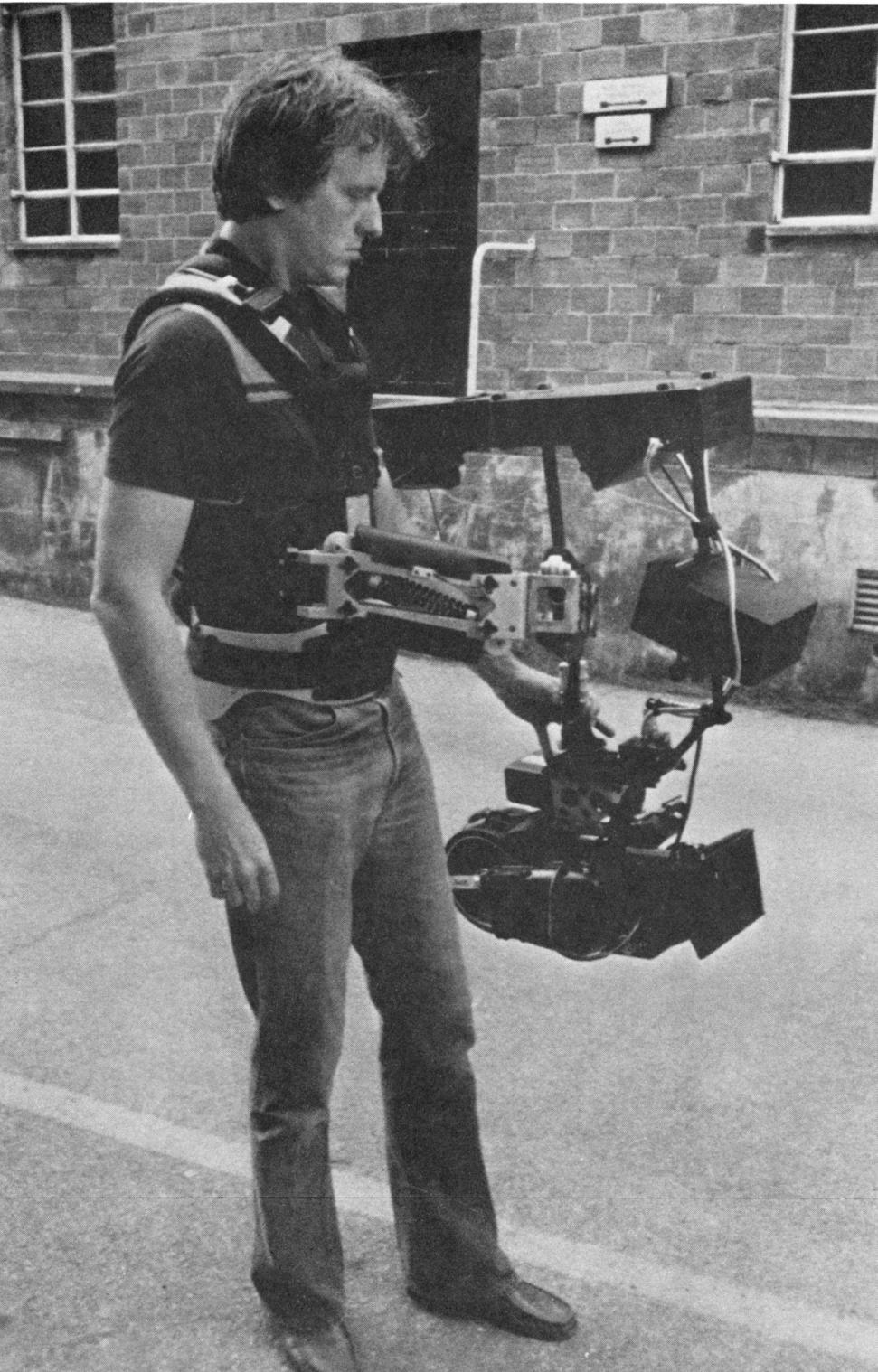
THE STEADICAM AND "THE SHINING"

By GARRETT BROWN

(EDITOR'S NOTE: Garrett Brown and Cinema Products Corporation shared an Oscar in 1978 for the invention and development of Steadicam. Immediately after the ceremony, Brown left for London to begin work on Stanley Kubrick's *THE SHINING*.)

In 1974 Stanley Kubrick received a print of the 35mm demonstration film shot with the original prototype of what would later be called the "Steadicam".

Garrett Brown, designer/inventor of the Oscar-winning Steadicam, shown with his invention during filming of *THE SHINING*. The Arriflex 35BL camera is mounted here in the underslung configuration to permit low-angle shooting. Brown, an expert operator of the equipment, had his expertise challenged on a day-to-day basis by Kubrick's meticulous requirements.



In constant use for almost a year, this Academy Award-winning camera stabilizer lends great fluid scope to Kubrick's ultimate horror film

Kubrick's telexed response is reprinted below.

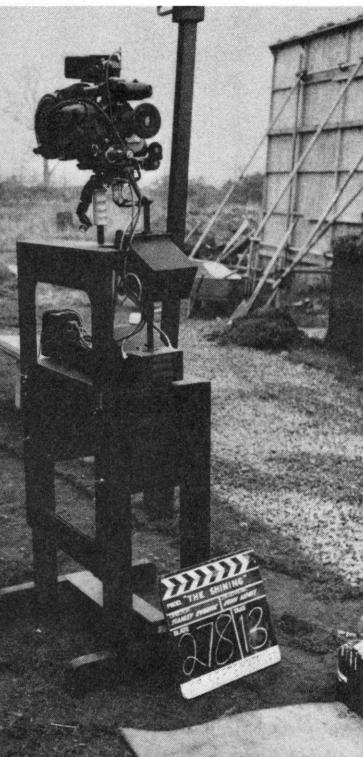
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TO ED DI GIULIO
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DEAR ED,

DEMO REEL ON HAND HELD MYSTERY STABILIZER WAS SPECTACULAR AND YOU CAN COUNT ON ME AS A CUSTOMER. IT SHOULD REVOLUTIONIZE THE WAY FILMS ARE SHOT. IF YOU ARE REALLY CONCERNED ABOUT PROTECTING ITS DESIGN BEFORE YOU FULLY PATENT IT, I SUGGEST YOU DELETE THE TWO OCCASIONS ON THE REEL WHERE THE SHADOW ON THE GROUND GIVES THE SKILLED COUNTER-INTELLIGENCE PHOTO INTERPRETER A FAIRLY CLEAR REPRESENTATION OF A MAN HOLDING A POLE WITH ONE HAND, WITH SOMETHING OR OTHER AT THE BOTTOM OF THE POLE WHICH APPEARS TO BE SLOWLY MOVING. BUT MY LIPS ARE SEALED. I HAVE A QUESTION: IS THERE A MINIMUM HEIGHT AT WHICH IT CAN BE USED? BEST REGARDS, STANLEY KUBRICK

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To date it cannot be said with complete conviction that the Steadicam has revolutionized the way films are shot. (Maybe it really should have slowly-moving parts underneath!) However, it certainly had a considerable effect on the way *THE SHINING* was shot. Many of Kubrick's tremendously convoluted sets were designed with the Steadicam's possibilities in mind and were not, therefore, necessarily provided with either flyaway walls or dolly-smooth floors. One set in particular, the giant Hedge Maze, could not have been photographed as Kubrick intended by any other means.

I worked on *THE SHINING* in England at the EMI Studios in Borehamwood for the better part of a year. I had daily opportunities to test the Steadicam and my operating against the most meticulous possible requirements as to framing accuracy, the ability to hit marks and precision repeatability. I began the picture with years of Steadicam use behind me and with the assumption that I could do with it whatever anyone could reasonably demand. I realized by the afternoon of the first day's work that here was a whole new ball game, and that the word "reasonable" was not in Kubrick's lexicon.



A custom "docking bay" protects the Steadicam between takes. Here the Arri 35BL is shown mounted in the conventional "topside" mode.

Opening day at the Steadicam Olympics consisted of thirty-or-so takes of an elaborate traveling shot in the lobby set, interspersed with ballockings for the air conditioning man (because it was 110 degrees in the artificial daylight produced by 700,000 watts of light outside the windows) and complaints about the quality of the remote TV image.

Although I had provided a crude video transmitter so that Kubrick could get an idea of the framing, I quickly realized that when Stanley said the crosshairs were to be on someone's *left* nostril, that no other nostril would do. And I further realized that the crudeness of the transmitted image simply prolonged the arguments as to the location of the dread crosshairs. Had I known on that first day that we would still be debating questions of framing a year later, long after the air-conditioning worked, I might have wished to become an air-conditioning man or a caterer...

THE SETS

I first met Stanley Kubrick during FILM 77 in London when Ed DiGiulio, president of Cinema Products Corporation, and I took the latest model out to Borehamwood to demonstrate it. At this time, *THE SHINING* was in its early pre-production stages. Stanley had engaged Roy Walker to design the sets, and we provided them with some food for thought by going over the various maneuvers that were then possible and,

at Kubrick's request, demonstrating the accuracy with which one could hit marks in order to pull focus in the neighborhood of T/1.4.

Throughout the following summer there were sporadic early morning phone calls from Kubrick and preliminary arrangements were made for my services, ostensibly to commence in December of 1978. In fact, the start date had been put back well into the spring when I was notified that I had won the Bert Easay Technical Award of the BSC. I decided to fly from Los Angeles to London to accept the award in person and to show Stanley some of our latest wrinkles. Cinema Products had just constructed the prototype of the new "Universal II—raised monitor" Steadicam and we had also devised the means to suspend the 35BL from the Steadicam platform, thereby permitting a whole new range of lens heights from about 18 inches to waist high. Kubrick seemed particularly pleased with the possibilities for low-lens shooting.

This time I was taken for a quick tour of the sets, including the monumental exterior set of the Overlook Hotel and the vast and intricate "Colorado Lounge" set with its interconnected corridors, stairs, and rooms on two levels. My excitement mounted as we progressed around corner after corner, each unexpected turn offering further possibilities for the Steadicam. Originally we had decided that I would rent some of the more exotic equipment to Kubrick and just come to England briefly to train an operator. However, as we continued, I became convinced that here was a unique opportunity for me. Kubrick wasn't just talking of stunt shots and staircases. He would use the Steadicam as it was intended to be used—as a tool which can help get the

lens where it's wanted in space and time without the classic limitations of the dolly and rane.

The kitchen set was enormous, with aisles winding between stoves and storage racks. The apartment sets were beautifully narrow. Suite 237 was elegant and ominous. The Overlook Hotel itself became a maze; absurdly oversized quarters for the players, yet ultimately claustrophobic. Here were fabulous sets for the moving camera; we could travel unobtrusively from space to space or lurk in the shadows with a menacing presence.

I guess I wanted to be there myself because Kubrick is, let's face it, *The Man*. He is the one director working who commands absolute authority over his project from conception to release print. The ultimate technologist, but more, his technology serves a larger vision which is uniquely his own. He is a film-maker in the most pure sense of the word. I learned a great deal about the making of movies from simply being on hand for the stupefying number of discussions which sought to improve one aspect or another of the production.

PROGRESS

During the year of production which followed, the science of air-conditioning was reinvented and you can be certain that just about every other branch of human learning was at least re-examined insofar as it touched upon the doings in Borehamwood. Laboratory science, lighting, lenses, and the logistics of lunch—all were scrutinized daily. For example, the offending video transmitter was soon replaced by adapting Ron Collins' AC-operated unit into a much smaller DC version (which has been a mainstay of my Steadicam ser-

A modified wheelchair served as a rolling camera platform for the Steadicam. In this photograph it moves ahead of Jack Nicholson, rolling over carpets and doorsills without bumps in the shot. The wheelchair also came in handy for following the little boy in his plastic "Big Wheel" through corridor after corridor.





(LEFT) Shelley Duvall, closely tracked by the Steadicam, flees in terror from her suddenly gone-berserk husband. (RIGHT) Jack Nicholson as the deranged spouse menaces his wife on the stairway of the hotel. In such scenes the Steadicam puts the viewer right into the middle of the action and makes possible far greater fluidity of movement than conventional cranes and dollies.

(LEFT) Scatman Crothers, as the kindly and concerned chef of the Overlook hotel, walks with young Danny Lloyd and Shelley Duvall through endless corridors of the massive hostelry, including kitchens and food storage areas that presented a kind of obstacle course to the Steadicam. The handling of the Steadicam-mounted camera is so smooth that it never calls attention to itself.



(LEFT) The rear facade of the Overlook Hotel, built on the backlot of the EMI Studios and dressed with tons of artificial snow. The imposing hotel was modeled after the real-life Timberline Lodge in Mt. Hood National Forest, Oregon. (RIGHT) Jack Nicholson as the sinister husband, now completely unhinged, runs through the Hedge Maze with the Steadicam moving in front of him.



vices ever since). I was determined to remain unencumbered by wires, so the propagation of the signal became the next drama.

Although Stanley knows an astonishing amount about an astonishing number of things, his grasp of antenna theory is weak. He is, however, a formidable opponent in an argument—with or without the facts—so some bizarre theorems were actually tested and a disturbing number of them actually worked. By switching to various antennas hidden behind the walls, we were finally able to provide Stanley with acceptable remote wireless video nearly anywhere within his sets. To annoy him we would indicate the forest of TV antennas aimed at the studio from suburban Borehamwood and imply that the TV signal was escaping the sound stage and being watched by a gaggle of "Monty Python" women every morning:

"Ooooh, poor Mr. Brown! . . That take seemed perfectly good to me!"

Somewhat later, our imitation ladies got even more sophisticated:

"Ooh, must be the 24mm Distagon!, see how it's vignetting in the viewfinder!"

The infant science of the Steadicam advanced during the year. With the expert assistance of Mick Mason and Harold Payne of Elstree Camera Hire, we constructed a number of new mounts to adapt the Steadicam to various wheeled conveyances. After one ride on the converted skateboard and one push on the custom sackbarrel, both went into the "Bin of Whims" never to be seen again. However, Ron Ford's elaborate motion picture wheelchair proved more enduring. We made the first prototype of the "Garfield Bracket" to adapt the

Steadicam arm to a Mitchell mount on the wheelchair. This was also useful on the Elemack and we later made use of the Elemack leveling-head on the wheelchair.

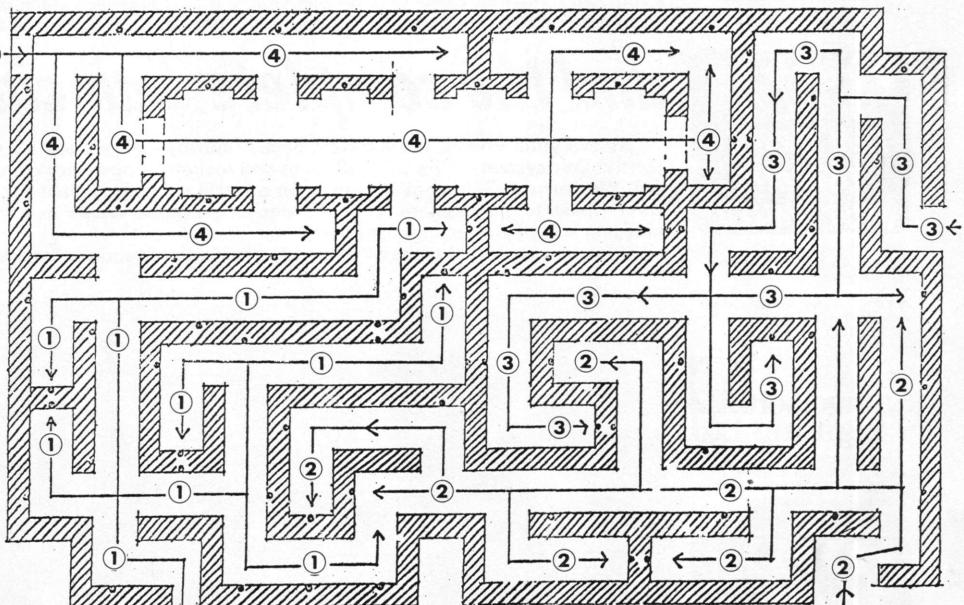
On the theory that one should ride whenever possible in order to concentrate on operating and forget navigating, I promoted every opportunity to use the chair. In a number of instances it was the only way to get the lens right down to floor level.

I think that useful progress was made in the area of operating technique. I had a chance to refine my own abilities in the most direct possible way. By repetition! (With playback!) Stanley made a number of useful observations and speculations about the interaction of the human body with machine such as this. Just how good can it possibly be? How close to the exact repeatability of a dolly shot? More

than most filmmakers he knows the limitations of the dolly, and when it was necessary to have phenomenally good track, he rebuilt an entire 300-foot plywood roadway three times to get it smoother. During one difficult shot, Kubrick said gloomily that the Steadicam would probably get the credit for all the dolly moves in the picture anyway!

Although he would admit that I could produce a printable take by any reasonable standard within the first few tries, Stanley would seldom respond with anything but derision until about take 14. He did not appear to be comfortable until we were well beyond take 20. Since the editing was to occur entirely after the filming of the production, he wanted at least two and preferably three perfect takes on each scene. Basically this was fine with me. Although most retakes were for

Continued on Page 826



(ABOVE RIGHT) A diagram of the convoluted Hedge Maze, which serves as the arena for the final chase in **THE SHINING**. (BELOW) Shelley Duvall and Danny Lloyd walk ahead as Stanley Kubrick follows the Steadicam, studying the monitor during early testing to determine the best lens height to be used in the Maze. This sequence is one which could not have been photographed nearly so effectively with any device other than the Steadicam.





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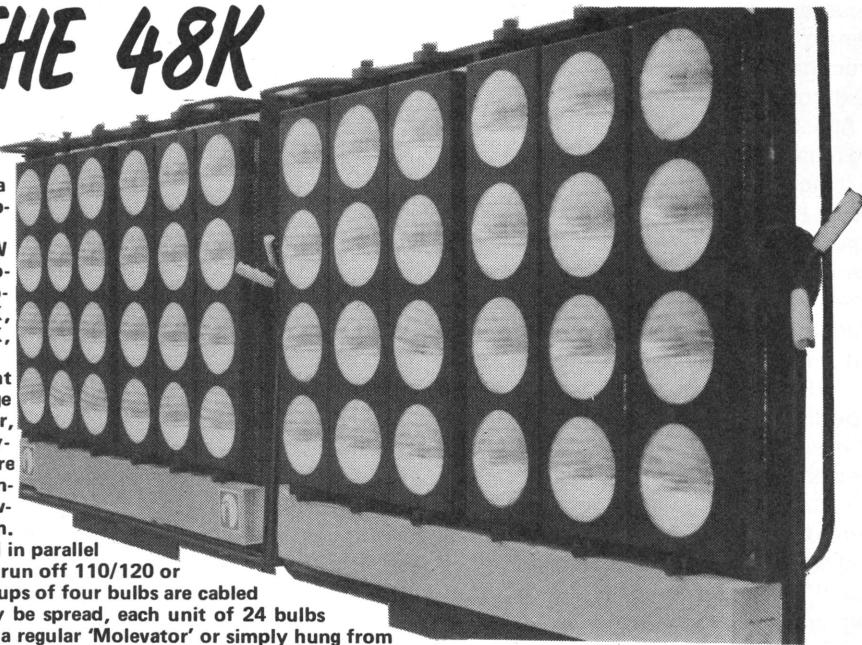
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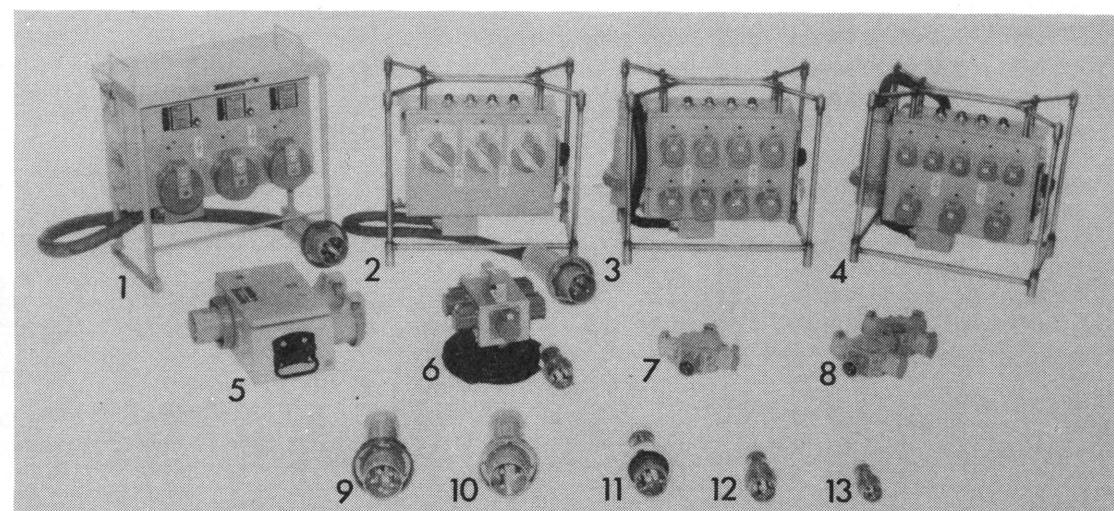
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THE THIRTEENTH MOTION PICTURE SEMINAR OF THE NORTHWEST

By HERB A. LIGHTMAN

SEATTLE, Washington

On our way north from Los Angeles we fly directly over magnificent Lake Tahoe, the place I call home, and then nervously skirt Mt. St. Helens, still smoldering from its latest eruption.

The next thing I know we are on the ground and being greeted by a pleasant young lady named Reneé, who has been sent by the Thirteenth Motion Picture Seminar of the Northwest to chauffeur us to our hotels.

Checking in at the Edgewater Inn (which boasts "You can fish from your room."), we just have time to unpack and freshen up before being transported to Pier 51, where *The Sightseer* is waiting to take us through the waterways and locks which skirt this lovely city. The purpose of this cruise is to give those attending the Seminar an opportunity to meet and chat informally with the speakers—and for the next couple of hours that is exactly what happens. Then the good ship ties up at a dock on Lake Union and we disembark to have dinner at a fine restaurant, with dancing to follow. I am totally, and very pleasantly, surprised when, at the close of dinner, a most elaborate cake is brought out in celebration of my birthday. The cake is a masterpiece of the art, decorated with an incredibly faithful caricature of myself poised eyeball-to-eyeball with a most voluptuous lady.

This is the way the good folks of Seattle welcome you aboard to their annual Seminar, which has become one of the most important events of its kind in the country. Organized just over a dozen years ago by a dedicated group of local filmmakers and technicians, it is slanted to provide an exchange of the latest technology and filmmaking methods for those living and working in the several

In its thirteenth successful year, this friendly forum of film talk in the Northwest has become one of the most vital events of its kind

northwestern states of America and the western provinces of Canada. Drawing heavily for its speakers from the top talents of Hollywood, as well as the local communities, it has become a highly prestigious event, one that is eagerly looked forward to each year by the hundreds of serious filmmakers who pack the Playhouse at Seattle Center for two days at the beginning of the summer.

This marks the sixth or seventh Seminar I have attended and my third stint as Moderator. The fact that with my non-stop schedule I keep coming back year after year is evidence of my respect for the event itself and my affection for the city of Seattle and its friendly people—especially people like Laszlo Pal, who is the organizer of the Seminar this year, and Les Davis, who has been its main sparkplug since its inception.

When I arrive at the Playhouse on the first morning (Friday) of the Seminar, the patio is crowded with mostly young people munching complimentary continental breakfast. Inside the doors there is an exhibit area devoted to film equipment and here I spot many good friends from Hollywood who have come up to display their latest wares.

The Seminar leads off with Carl Jones, who first shows about a reel of *SAVAGE*, a stunning (and funny) documentary on the sport (?) of professional wrestling which he has made. It is a superb little gem of filmmaking and Mr. Jones goes on to describe how, after having spent most of his working life in a totally unrelated field, he has only recently, in middle age, turned to filmmaking. He describes better than anyone I've ever heard the agony and ecstasy of being "hooked" on film and trying to satisfy the demands of this jealous mistress, plus the sacrifices he

has had to make in terms of family, friends and finances. All I can say is that, judging from the quality of his work, he has certainly chosen the right career.

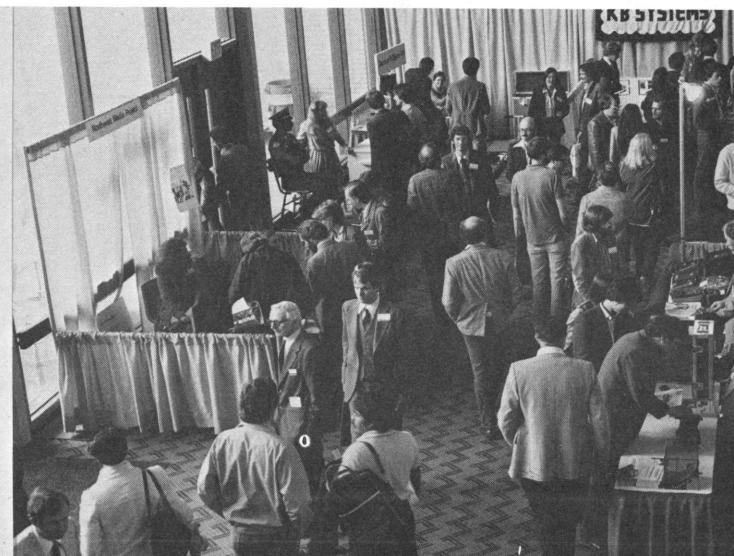
Next up is Mollie Gregory, who speaks on *AGAINST ALL ODDS: FINANCING YOUR SHORT FILM*. She is a pleasant but no-nonsense lady who gets right down to cases on the subject of getting the money to finance short films and low-budget features. Her advice is realistic and valuable.

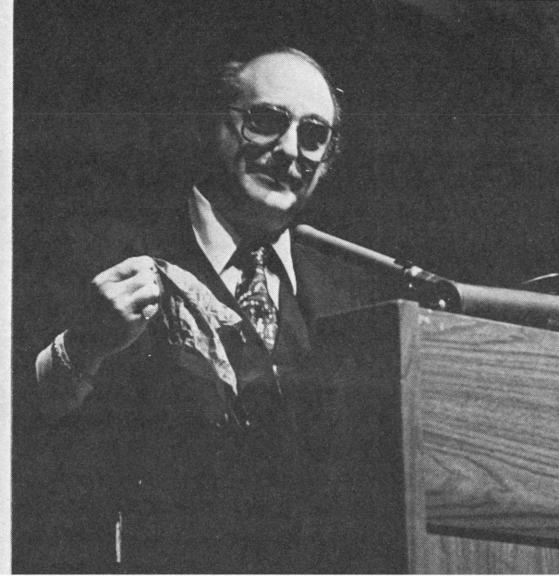
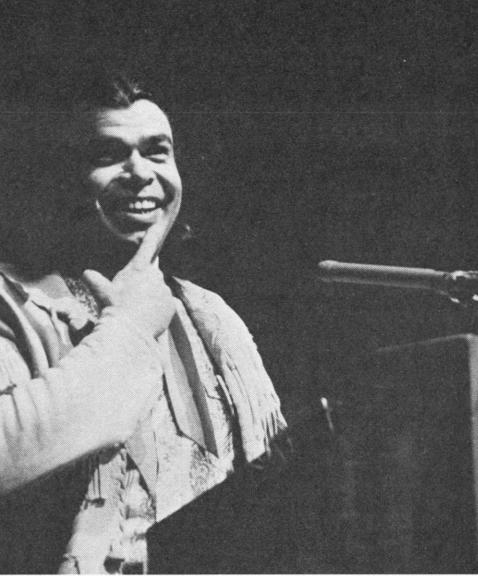
In a similar vein (but from the viewpoint of the lender of money) is the talk by Lewis Horowitz on *FILM FINANCING FROM THE BANKER'S POINT OF VIEW*. Clearly he knows what he's talking about, since he is a specialist (with the First Los Angeles Bank's Entertainment Industries Division) in evaluating prospective film projects for possible loans. His advice is most down-to-earth and valuable and I see many people in the audience furiously scribbling notes.

Another down-to-earth gentleman is Lawrence Woolner, next up, who has spent several decades in the distribution end of the motion picture industry and provides a most realistic insight into this all-important aspect of what is essentially the film "business". He tells what distribution specialists look for in terms of motion pictures that they can promote effectively.

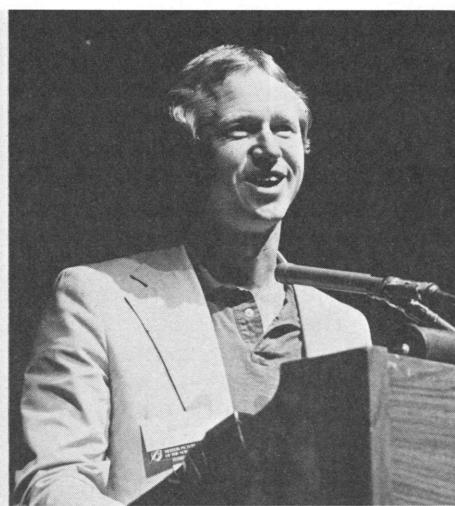
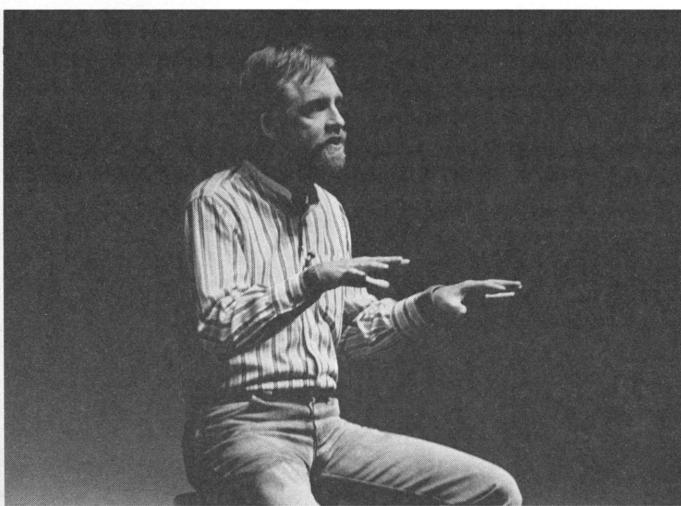
Another side of that same coin is presented by Annick Smith, who speaks on *HEARTLAND: THE UNSOLVED MYSTERY OF HOW TO DISTRIBUTE A PRIZE-WINNING INDEPENDENT FEATURE*. Miss Smith's tale is a sad one about how she and an associate have mortgaged their respective homesteads to produce a beautiful first-feature, *HEARTLAND*, which has won much criti-

(LEFT) Crowds of filmmakers and film buffs arriving in the foyer of the Playhouse in Seattle Center for the opening day of the Thirteenth Motion Picture Seminar of the Northwest. (RIGHT) Exhibitors representing the most prominent manufacturers of motion picture equipment answer questions and display their latest wares at booths set up in the foyer. This Seminar is sufficiently prestigious to attract many of the top artists and technicians of Hollywood as guest speakers.





Among the distinguished speakers at the Seminar: (LEFT) Phil Lucas. Himself an Indian, he deplored negative representation of Indians in films. (CENTER) Famed screenwriter and President of the Academy of Motion Picture Arts and Sciences Fay Kanin. (LEFT) Banker Lewis Horowitz performed a few magic tricks while talking about film financing. (BELOW LEFT) Actress-turned-producer Stella Stevens showed excerpts from her new film project. (CENTER) Scripter Bill Kerby gave a witty talk about "Writing for Superstars". (RIGHT) Chuck East, who produced OLYMPIAD CONCERTO, a lyrical short film about skiing events at the Lake Placid Olympics.



cal acclaim and several awards, but which has resisted all efforts to find a distributor. The sobering conclusion here is that perhaps one should try to lock down a distributor (if possible) before risking the homestead to produce a film.

Bill Kerby, on the subject of WRITING FOR SUPERSTARS, obviously knows what he's talking about, being a highly successful scenarist who has written for many of the top stars. His dry humor is hilarious and his insight into the special kind of egomania that prevails in Hollywood is "educational", to say the least.

Next up is an old friend, Herb Farmer, who is Professor of Cinema and Associate Chairman of the Cinema-TV Division at the University of Southern California. We first met years ago when I was teaching some graduate courses in the USC Cinema Dept., and Mr. Farmer has since become very much a pillar of the film community. He speaks on the subject, THE KEY TO THE FUTURE IS PEOPLE and he presents many valuable insights into the training of young filmmakers.

The next speaker is the famous Dutch

film producer/director, Paul Verhoeven, whose works include TURKISH DELIGHT, KATJE TIPPLE and SOLDIER OF ORANGE. His topic today is SPETTERS: DIRECTING IN THE DUTCH CINEMA. "SPETTERS" is the name of his latest production and he uses it as a springboard to detail how the film industry of the Netherlands, though partially subsidized by the government, must produce films with appeal to the international market, while operating with marginal facilities. He is a charming and humorous gentleman whose remarks are most appreciated by the audience.

Next it's my turn and I have been assigned the topic: NEW TRENDS IN MOTION PICTURE EQUIPMENT. This is about a six-hour subject, and since I have been allotted all of 18 minutes, I can concentrate only on the new motion picture cameras, and even at that I have to race through my presentation at a pretty fast clip.

Charles Sippl next speaks on THE DIGITAL 1980s: FOUR-DOLLAR MICRO COMPUTERS AND CONTROLLERS TAKE OVER AUDIO-VISUAL SYS-

TEMS. While the technical details of his speech are way over my head, the gist is that there are many applications for this technology in the communications media.

Closing the papers program for the day is another friend, Richard Edlund, who speaks on SPECIAL PHOTOGRAPHIC EFFECTS FOR "THE EMPIRE STRIKES BACK". Mr. Edlund, who served as Co-supervisor of Special Effects on that latest STAR WARS epic, shows film clips detailing how some of the most intricate effects were built up step-by-step.

That evening we are treated to a most interesting program of short films and commercials entitled "Best of the Northwest", and it obviously focuses on the work of local filmmakers of the Northwest Pacific area. It is evident from the films shown that there is no lack of cinematic talent in the area.

The next morning, after continental breakfast on the patio of the Playhouse, the Seminar resumes with Chuck East on the subject: OLYMPIAD CONCERTO: *Continued on Page 814*

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FILMMAKING IN HOLLYWOOD — THE CHANGING SCENE

By ROGER CORMAN

(EDITOR'S NOTE: The following has been excerpted from a luncheon speech delivered by producer/director/distributor Roger Corman on May 31 at the Thirteenth Annual Motion Picture Seminar of the Northwest, held in Seattle, Washington.)

My subject today includes spotting new talent for the motion picture industry, which, to a certain extent, is a matter of being lucky enough to be in the right place at the right time and, on top of that, hopefully exercising some judgment.

I've just arbitrarily divided the subject up into four sections—those that I am the most familiar with and have dealt with most frequently: actors, writers, directors and producers. However, Cal Bernstein, who spoke a little bit earlier, was talking about various cameramen and I realized that he and I had worked with some of the same cameramen, so I will mention them a bit, too.

Actually, I think there are four top cinematographers who either did their first feature for me or their first American film: Haskell Wexler, John Alonzo, Nestor Almendros and Laszlo Kovacs. Vilmos Zsigmond and a number of others have worked with us, as well. As to how I chose these cinematographers, I'm not exactly certain. In some cases I looked at their film, but not in all cases. I never saw anything that Johnny Alonzo had done. He just came highly recommended to me. But usually it was a combination of looking at some film and really listening to other people's advice—taking recommendations and then talking with the person. I'm a very firm believer in really sitting down and talking with somebody. In that way you gain a certain insight into the person's ability and his temperament, as well as his willingness to work, particularly in low budget films. But I feel that in any kind of filmmaking a person has to have not only ability, but also a certain stability, because this is a notoriously unstable field. You also have to be willing to work very, very hard. It's almost as if you had a dedication, in the true religious sense. It's almost a Catholic calling to a vocation, to work in films. Living in Southern California, if we simply wanted money we could all be working in real estate. We could make a lot of money more easily.

Now, breaking my subject down into actors, writers, directors and producers, let me start with actors. You are on a little bit more solid ground in evaluating actors

A Hollywood filmmaker with a legendary record of success comments on his search for talent and the new opportunities in film production now

because you are able to look at film that they may have done previously, or to see them possibly on the stage. Then you can conduct interviews, which can be very misleading, because a person may come in and do very well in a cold reading or in an improvisation and either hang up on the set or be unable to go beyond that on the set.

I work on the basis of holding cold readings for actors when they come in. I explain the part to them a little bit, give them a script so that they can step into another room and look at it for a little while, and then ask them to come back and do the reading. I also work on the basis of improvisation, because you sometimes learn more from an improvisation than you do from a cold reading. All of these methods are imperfect, but they are the two ways in which I've found I could work the best. Plus, just talking with the actor and talking with other actors and other directors. We very seldom use screen tests, which are very good, but on our budgets, if I'm going to put together a crew for a day I'm not going to shoot a screen test; I'm going to shoot a day's work on the film. Beyond that there are intangibles; charisma and, unfortunately, looks for a lead do mean something, although they don't mean as much as they formerly did. We've had some success with the actors and actresses who have started with us.

In selecting writers you are on even more solid ground. We simply read what they have written before, but not necessarily screenplays. As a matter of fact, for our purposes, probably not screenplays, because working in a low budget field we find that most of the established screenwriters are already beyond our budget limitations, so we must go elsewhere. We will go to film schools and find people who have written scripts or written and directed scripts in the course of their film training, or maybe written a script that has never been produced that we think has merit. Very often we will go to novelists or short story writers who have been well reviewed. We subscribe to a number of literary journals and we read the reviews quite religiously, particularly of new novelists, new short story writers and a number of our best writers have come from that field. Bob Towne is a writer who won an Academy Award a couple of years ago and started with us and will be directing soon, as well.

I might mention a number of the directors we have worked with who have

been writers, as well, particularly Francis Coppola, Peter Bogdanovich and Marty Scorsese. There is a unity between the work of the writer and the director and the French, I know, refer continually to the *auteur* theory, although they have been referring to it a little bit less now than they formerly did. To me the true *auteur* is the writer-director-producer, the Ingmar Bergman, or somebody of that sort who combines all of those elements of the creative function in his hands. Now, as for directors, we have had some of our greatest success with directors such as Coppola, Bogdanovich, Scorsese and Irv Kershner, I think someone mentioned a picture I had almost forgotten, *STAKE OUT ON DOPE STREET*. The cameraman on that was Haskell Wexler, doing his first feature film, and the director was Irv Kershner, doing *his* first feature film.

Having been a director myself, I talk at great length to the director and listen to what he has to say. I look at previous film, particularly student films, more recently sometimes commercials. We have given first opportunities to many directors but we are not doing that quite as much as we have in the past because, like most other production companies, our budgets have risen and when I was making films for \$50,000 or \$100,000 or \$150,000 it was not a difficult gamble to take somebody directly out of film school or somebody like Peter Bogdanovich, who had never even gone to film school, who just was a critic who had worked for me as an assistant and whom I felt was so bright that I could finance him in such a film.

Our films are now inching their way up to half-a-million, a million dollars. *BAT-Continued on Page 831*

Producer/director Roger Corman addresses luncheon crowd at Thirteenth Motion Picture Seminar of the Northwest. Since 1970 he has headed his own production/distribution company, New World Pictures.



THE NEW MOTION PICTURE SOUND

By FRANK SERAFINE

Being a confirmed Trekkie—a devotee of that incomparable television series, STAR TREK—and a longtime science-fiction moviegoer, I was unbelievably honored to be invited to create the sound effects for STAR TREK, The Motion Picture, a true media legacy.

Prior to working on this film, the majority of my experience was in the music and audio synthesis recording world, where the sounds must provide some sort of conceptual imagery. But on STAR TREK, THE MOTION PICTURE, the visuals were already established. Now the sounds must not only create particular aural impressions, they must enhance existing futuristic film sequences and subsequently increase the film's audience appeal.

Through studies with the Ravi Shankar family School of Music, I had learned of the psychological and physiological properties of different tone clusters—basically, minor clusters produce sad or mournful sensations and major clusters, jubilant and cheerful. This knowledge was especially useful for setting a mood and conveying the ambience of specific situations. The highly advanced sound units used on this project were invaluable, for I was creating sounds that had never been heard before, that complemented visuals that were beyond the moviegoer's realm of experience. This would have been next to impossible with conventional equipment.

Acoustical re-recording, digital synthesis and multi-track recording with SMPTE time coding units for locking in the audio and video from a film transfer allow a single synthesist to create full orchestration, dialogue processing and special sound effects to the picture. The impact that synthesized sound effects can have on the motion picture industry is becoming increasingly apparent. Here is a viable and cost-effective means of producing music and audio effects for practically any film project. And new audio systems are being introduced onto the market every week, bringing virtually unlimited audio possibilities to the fingertips of the sound image composer.

Motion picture sound has remained horrendously obsolete. Particularly in comparison to the sound quality available in the record industry. But it's beginning to realize its day with the advancements being made in computer programming, digital synthesis and digital signal processing. For me, STAR TREK, THE MOTION PICTURE was a vehicle to

With the advancements being made in computer programming, digital synthesis and digital signal processing film sound is coming of age

launch motion picture sound into the digital arena and an opportunity to realize one of my special effects dreams.

Outlining the several areas divided, the sound for STAR TREK was a mammoth undertaking. The first exploration was location dialogue engineered by Tom Overton using Shure SM-7 microphones, Nagra 4.2 recorders, and a Stellavox portable mixer at non-Dolby. Much of the dialogue production recording could not be used because of noises inherent to a number of sets due to film projectors and other miscellaneous sound problems characteristic of location sound. The bridge of the Enterprise where the majority of action takes place, was one of these sets. It was crowded with display monitors at the different crew stations. Only 40% of location sound was, therefore, used. The other 60% of dialogue and foley such as footsteps, switches, clicks, etc., were later re-recorded in post production on the foley stage and edited and mixed later as predubs on the mixing stage. Any adjustments in these sound tracks are later made by the editors.

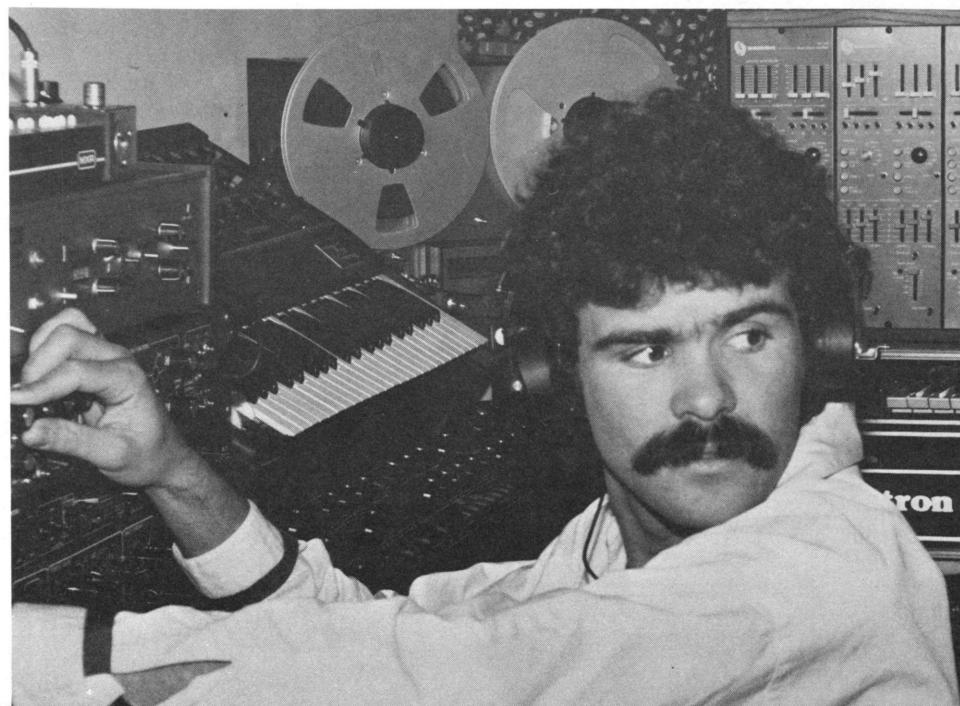
Assisted by dialogue loop editor Sean Haneley, actors playing characters such as Mr. Spock and James Kirk would then substitute another reading later in the dubbing studio. The recording of the actors' voices to match the picture was handled in post-production at Paramount Studios through a process called Automatic Dialogue Replacement or A.D.R. In another common technique of looping,

the actor will hear the originally recorded line, then read it for recording, and read it again until the editor thinks it matches. In some instances, the dialogue was to be considered a special sound effect, through the processing and alteration done with an EMS vocoder. This technique was used for dramatic purposes.

As all the basic busy work of predubbing elements was taking place, the sound editors or (sound cutters) supervised by Richard Anderson, Cecilia Hall, George Watters Jr., Allen Murray, Colin Waddy and Steve Flick, first had the responsibility of editing and synching the dialogue and foley to picture before the actual execution of mixed dubbing, special sound effects and music mixing were to take place. Some of the special acoustically generated, so-called "home-brew" elements, were generated by the sound editors themselves using variable speed devices supplied by Glen Glenn Sound at Paramount Studios, sounds such as bee swarms, ripping canvas, mortar fire, etc.

As all the sound concepts came together in elements, they were categorized in three divisions: A Effects, B Effects, and C Effects. The A Effects consisted of synthesized and acoustically created main important major effects—mind melds, Spock spacewalk, digitalization, explosions, transporters, warp speeds, energy bolts, V'ger, etc. The B Effects consisted of lesser effects such as clicks, switches, beeps, impacts, foley, etc. The C Effects were more sub-

Frank Serafine at work on sound tracks for STAR TREK: THE MOTION PICTURE. His experience in the music and audio synthesis recording world has given him the background to visualize how a single synthesis can create full orchestration, dialogue processing and special sound effects for the motion picture industry.



liminal effects—backgrounds, crowd reactions, etc. All these elements were then mixed as predubs for easy handling to follow the sequence of events leading to the final mix.

All the re-recorded sounds for STAR TREK were mixed at Goldwyn Sound Studios, Stage D, in Hollywood. Supervised by Bill Varney, award winner for STAR WARS and currently THE EMPIRE STRIKES BACK. Before Varney could get various reels of effects mounted in the machine room for mixing, cue sheets had to be designed by the editors who cut the reels. These indicated what sound was located on what track in relationship to the reel of picture. This standard is common in film mixing to give engineers indications of when and where to make moves on the console. All the elements were to be placed on specific machines to brief the mixers which tracks were Dolby, non-Dolby stereo and mono formats.

All the homebrew effects turned in by the sound editors were pulled directly from Paramount's Sound Effects Library on 35mm non-Dolby stock, stockpiled since the 1930's. These elements were carefully separated from the current Dolby tracks and synthesized sound effects for the mixer to dial up the correct Dolby and non-Dolby functions. Bill handled all B and C effects accompanied by Steve Maslow on music mixing and Greg Landacker on A sound effects. These major areas covered first C effects of dialogue and ambience textures, pre-dubbing or ping-ponging to one of three tracks. A and B effects on track 2 and Music on 3, then remixed to 4-track (left, right, center and surround) later to be mixed on six-track after national release to be shown only in exclusive theaters.

The re-recording equipment in Goldwyn Studios, Stage D, is a Quad-2 Mixer with a Yamaha DM 1000 for an extra effects mixer. The major processing systems used were Lexicon digital reverb, Eventide Harmonizer and EMS Vocoder. All of the music and a good percent of all the effects were recorded dry and in the master dub, processed through Lexicon digital reverb for the depth of field that was required.

The music for STAR TREK was composed by Jerry Goldsmith, known for many of his great film and TV scores. Jerry recorded his Los Angeles-based ninety piece orchestra at 20th Century Fox, Sound Stage I, known for its excellent natural acoustics. The orchestra was recorded on a API mixing board with three overhead microphones, left, center and right, directly to 35mm mag tape, also simultaneously with a sixteen-track MM100 as a safe copy.

One of the most delicate of our prob-



Synthesation Studios in Los Angeles. This studio, engineered by Serafine, consists of digital and analog synthesizers, advanced signal processors and SMPTE audio-to-video interlock systems for the composition of sound images and electronic music for film, television and video projects.

lems on the sound and mixing crew was the matching inside and outside from music to sound effects. Oftentimes, music would override the effects and vice-versa.

This required either re-creating sounds to match the key of the music or extensive use of harmonizers. The sounds that registered in the higher frequencies tended to be the safest place for non-interference. Extensive use of equalization was handy in the thinning of certain sound to music interfaces. Some of the special musical sound effects were recorded within the orchestra score by Gregg Hunley on an acoustical beam (something like a railroad tie with large piano strings attached) using transducers and stereo output into advanced audio digital delay systems. This effect added a deep, powerful blast in a few sections of the score.

All the unusually created sound effects were generated by the electronic sound team consisting of Al Howarth and myself, creating most of the major sequences. Other artists participated in earlier stages of production and these included Francisco Lupica, Joel Goldsmith and Dirk Dalton.

Electronic sound synthesis is rapidly replacing acoustic instruments in film work because so many films like STAR TREK need new sounds to represent the new areas into which man's imagination is venturing. Digital synthesizers and multi-track recording made it possible to

create audio sensations to correspond with futuristic visual concepts.

In the beginning stages of the STAR TREK film project, many synthesizer artists submitted tapes to Paramount. Most were musical in nature. STAR TREK's editor, Todd Ramsey, in consultation with director Robert Wise, felt that the picture should have a genuinely unique audio style, incorporating sound effects that would become as characteristic of science-fiction in our era as had certain sound effects from previous eras that had produced such science-fiction masterpieces as 2001: A SPACE ODYSSEY, FORBIDDEN PLANET and THIS ISLAND EARTH.

One particular concern was to avoid sounds that had become over-familiar because of their frequent use in previous science-fiction films.

For example, the Enterprise Mission supposedly takes place in 2300. Therefore, we are living in the future. All existing sounds that we may think are futuristic now may not carry over as futuristic in the year 2300. Therefore, we were not to cliché typically common sounds.

Much time was spent on such simple tasks as even the sounds of doors opening and closing. View screens and indicators that would normally make beeps and clicks were kept free of sound, producing a more comfortable atmosphere for the star fleet to live in. On the other hand, the interior of the Klingon Imperial cruisers created a much more devastat-

ing atmosphere. The Klingon ship's indicators all have matching sounds and tones, creating a noisier environment characteristic of the crude life style of the Klingons.

Another example of uniqueness in the application of sound effects was the fact that spaceship travel shown on the screen was not accompanied by the usual low-base rumble. Wise's metaphysical approach stemmed more from the 2001: A SPACE ODYSSEY perspective than from the STAR WARS genre. The demand for a new type of sound resulted in an expansion of the new art of electronic sound creation—a whole new field. It meant pushing the limits to create sounds that had never been heard before.

STAR TREK—THE MOTION PICTURE pioneered the digital age, creating new areas for the sound image composers. The first special assignment was to create the Transporter effect, as shown in the sequence where the crewmen are transformed into light rays for transport to and from the spaceship.

Because this was one of the more recognizable sound effects from the previous TV series, we were required to stay within "Trekkie" boundaries in creating our new effect. The sound for the Transporter shown on TV had been made in the Sixties on a Farfisa organ peaked through a spring reverb. This sound was researched for several weeks, using the Conbrio Digital Synthesizer. This synthesizer is 100% digital. Therefore, every sound oscillator, frequency, filter and wave form has to be programmed into the unit before the execution of a sound effect can take place. The ability to analyze all of these functions while shaping the exact sound on a computer view screen revolutionized all traditional concepts and ideas developed by means of former analog synthesizer techniques.

One of the problems that we encountered with purely digital synthesis was the absence of actual touch of the instrument, making it too mechanically precise and lacking the warmth and human quality found in the analog instruments with their slight imperfections. If you wanted imperfections, you would have to program them in. It is clear to me that digital synthesis will be the future of synthesized sound, due to the enormous amounts of memory storage available.

Digital synthesis is still in its pioneering stage. With the "microization" of the computer chip, we will soon see little pocket synthesizers encompassing 24 tracks of digital recording, able to store thousands of sounds and still fit in a briefcase.

Other elements were combined in the

making of the Transporter. Analog synthesizer techniques also accompanied the Transporter sound, using the Roland Jupiter IV Compuphonic Synthesizer. This element added a very musical texture to this essentially visual sequence. For the malfunction of the Transporter (the sequence, which results in the deaths of two oncoming crewmen), we took the first element of the Transporter from the two-track mixes and transferred it onto an eight-track recorder, ping-ponging the signal onto tracks three to eight, running the signals separately through processing systems such as flangers, harmonizers, a wavemaker, a dual phasing device and a Hawk reverb unit.

For the second element, microphone feedback was generated from an AKG 414 held at a distance of ten feet in front of a twin reverb guitar amplifier with a Quad-8 compressor as part of the signal. This sound was played in a bathroom, then re-recorded at half speed to produce the Aqua sounding effect.

This marked the initiation of acoustical re-recording. This technique of recording sounds using manipulation of acoustically recorded sounds was most commonly explored by Ben Burtt, sound creator for the STAR WARS films. The characteristics of organic sound sources scope in many directions that are as creative as synthesized sound, such as the great dog fight scene in STAR WARS. This sound was created with an elephant roar, utilizing tape manipulation and processing techniques.

A few examples of these techniques in STAR TREK were demonstrated in the exterior of the wormhole sequence. This effect was created by starting with sounds of a cowboy fight from an old Paramount western, taking the sound and reversing the direction of playback, then running it at half speed and processing it through a Maxon Analog Delay. If you take a look at the physics of the sound of hitting actual blows, there is a moment of impact—of air moving, cracking and bashing. In the wormhole, they were being sucked in, and the reversed cowboy fight created a pulling effect. All the interior sounds of the wormhole were recorded by Howarth on a prototype Prophet 10 directly to two-track. Al Howarth teamed closely with sound editor Steven Flick and mix dubber Bill Varney. This effect was shaped on the dubbing stage and was processed with the Eben-tide harmonizer to create a frantically whirlwind sensation.

Another example of acoustical re-recording was in the V'ger sequence, when the voice replies to Captain Kirk. This sound was created using percussive

mallets, beating on the inside of an acoustic grand piano, later mixed onto 24 tracks by Joel Goldsmith, using Lexicon Digital Reverb for a vast-sounding dimension.

STAR TREK was a very good example of the blending of acoustical re-recorded sounds with a tasteful variety of synthesized sounds.

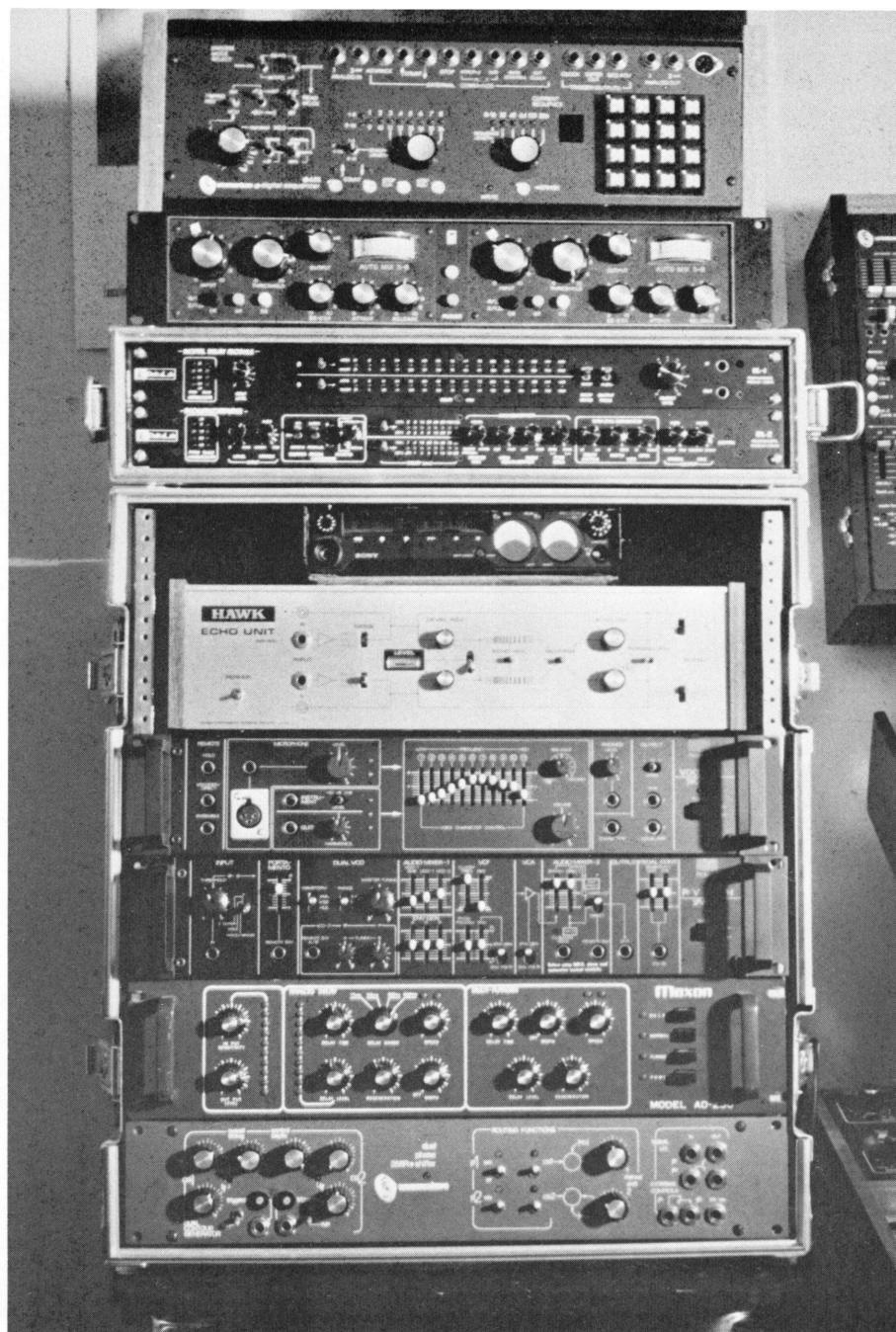
Most all of the electronic effects for STAR TREK were recorded on Teac 80-8 with DBX 155, using Ampex 456 Grand Master Tape. Recording consoles used were Modified Teac 5-A and Wavemaker's 858-A. At first, the sound team resisted, thinking that they needed 24 tracks. It turned out that eight was enough for creating effects. For the handling of musical recording, it is essential to have 24 tracks; for the creating of sound effects, eight is enough.

This technique of dividing effects up into elements gave the director accessibility and versatility concerning just what he wanted to hear or not hear in the sequence, as opposed to 24-track recording in which you would tend to make a completed mix of all the elements. Therefore, if there were changes to be made, this would mean a complete remix of the effect.

In addition to developing the mentality of the grouping of elements, grouping sound effects is important in many instances. In this case, the director would hear sounds and concepts, but could not clearly explain them (being that there is no sound that exists on earth to represent these areas). Therefore, all sound that was made was broken down into several elements to separate the variety of textures that would make up the completed sound. In most cases, to communicate the overall concept in mind, a full mixed composite track was made along with the units. This was given to the editors so they would have a basic concept of what was being attempted as a whole.

For instance, in the digitalization of the Klingon cruisers and Epsilon 9 monitoring station, there were 40 elements made up of various synthesizer tracks done on 8-track. Certain textures would correspond with certain characteristics visually. For instance, high wind down, low digitalization, digital teeth, harmonized rain. These were all names that corresponded the sound to picture. Every element was to have a name.

The synthesizer mainly used in STAR TREK was the Prophet 5 Synthesizer. This synthesizer was most perfectly suited for our needs. The Prophet marries the analog synthesizer with a digital memory computer. Many synthesizers had been explored in earlier stages, including huge modular systems with lots



This signal processor used by Frank Serafine in building sound tracks for **STAR TREK: THE MOTION PICTURE** was an essential tool for creating psychoacoustic enhancements, phasing, flanging and dimensional effects. Most of the acoustically re-recorded and synthesized sounds for **STAR TREK** were recorded on TEAC 80-8 8-track and 155 DBX.

of patchwork. Many variables were derived, but the problem of patching systems is that they are not quick enough, along with being monophonic. The Prophet is polyphonic.

Another problem inherent to patching systems is the absence of computer memory. Many hours went into creating these sounds, only to find that they might have to be changed the next day. The Prophet 5 provided all these memorized sounds instantly upon recall, plus the ability to edit at any given point. Forty different programs can be stored into the system's memory. In addition, all the programming for the Prophet is internally routed; no mechanical patching is used.

This was particularly handy in many instances, considering that under the intense deadline scheduled, the visual effects hadn't started arriving till very close to our final release date. We developed several sound concepts, sight unseen to the visuals, for several months.

Occasionally, upon visiting the studios of John Dykstra and Douglas Trumbull (the visual effects creators for the film), we would catch glimpses of these ongoing and ever-changing visual effects. A lot of what we saw down there was completely different from what it would be when we actually got it, so at the last minute, we had to scramble. Digital memory made possible the versatility

and alteration of all the pre-picture concepts, as opposed to having to start from scratch. The method most commonly characteristic in the mechanical patching of analog synthesizers.

In the warp acceleration light barrier, the scene where the Enterprise shot across the screen into Warp Speed, I had to choose a sound to signify this action. Using Prophet 5, Roland Jupiter IV and Moog synthesizers, I started sculpting my basic ideas. I then took the sound that was recorded onto track 1 and began to process with flanging and delay, etc., dropping those sounds onto tracks 2, 3, 4, etc. Therefore, track 1 was a skeleton track to which I could add more meat. The certain processed signals were broken down into as many elements as corresponded to the colors in the stretching tail of light.

For the backlash of the warp acceleration stretch, the sound created was another example of non-acoustic sound recording; using a cymbal crash turned backwards at half-speed created a stretching rubber-band effect. This sound was cut to total perfection by editor Alan Murray.

Probably the most ominous sound created in **STAR TREK** was that produced for ending the film in a celebration of light upon Ilia's and Decker's entering into the vast cosmos. This mind-meld sequence included a total of 360 tracks. Along with co-creator and engineer Miki Curtis, renowned Japanese Producer, we worked long hours to complete this final sequence.

The original tracks were recorded with Prophet and Moog synthesizers on an 8-track recorder. These multitudes of ideas and concepts were then all mixed down to two tracks as a sub mix. All these two-track sub mixes were then again transferred back to eight-track. They were finally mixed down into 22 different elements, as they were combined to create the 360-track final mix.

One of the most technically intricate problems we encountered was in the transferring process from 1/4-inch tape to 35mm mag track. Since the film was to be released with Dolby sound, we recorded everything at the Dolby level—only to find later on that the best procedure was to mix down all sounds *non-Dolby*. The Dolby would then be added later to the 35mm mag from 1/4-inch tape during the transfer.

Another technique of eliminating noise in the process of recording was to spontaneously program several synthesizers at the same time, recording all elements live directly onto two-track. Still another procedure we used was the recording of synthesizers live on the dubbing stage

Continued on Page 486



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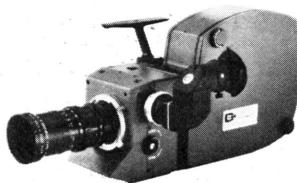
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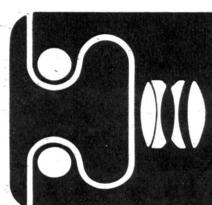
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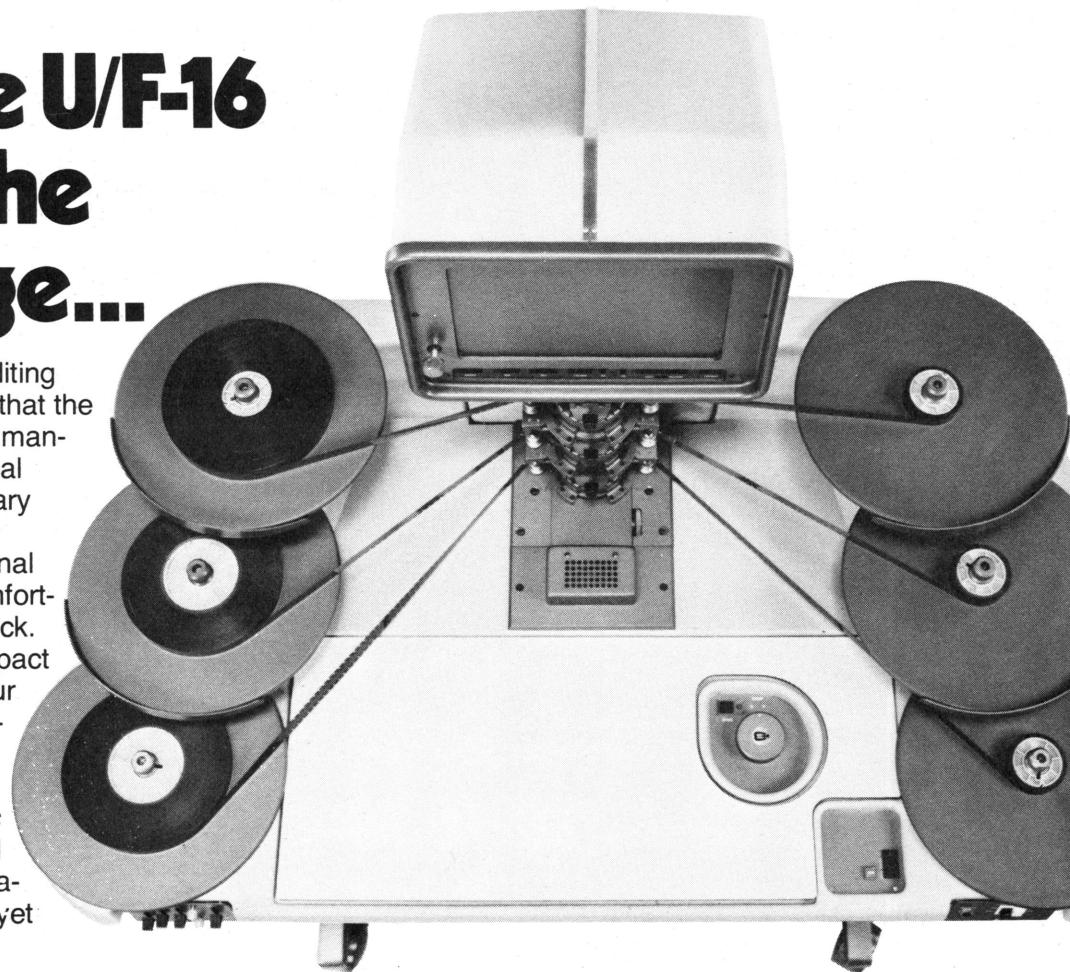
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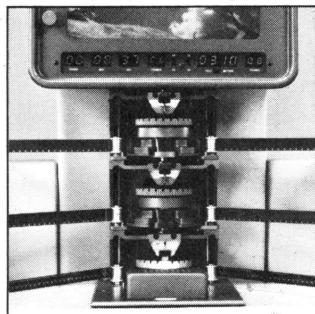
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INDUSTRY ACTIVITIES

ASC ENTERTAINS JAPANESE DELEGATION

"Minasama, Konbanwa. Good Evening, Gentlemen." These were the opening remarks of Stanley Cortez as he greeted a delegation of Japanese from the Japanese Society of Cinematographers.

The Clubhouse was the scene of an informal dinner at which the Japanese guests were hosted by the Board of Governors of the A.S.C. and members of the Hollywood industry, manufacturers, suppliers and lab men.

Ernest Laszlo planned activities to fill three days and the Japanese were exhausted when they boarded their plane for the East Coast on Friday evening.

Laszlo, having been entertained in Japan on a number of occasions, went all out to arrange for the delegation to see all aspects of the Hollywood community. On Wednesday, along with Milt Krasner and Harry Wolf, the entire group visited the Motion Picture Home in Woodland Hills. The Japanese were very impressed with the way Hollywood takes care of its own.

Robert Gottschalk, President of Panavision, personally conducted a tour of his plant and later served a luncheon of Sushi. The luncheon was delightful because the Japanese interpreters were augmented by Panavision employees who spoke Japanese fluently so the groups could be smaller with more questions being answered.

(BELOW LEFT) Stanley Cortez, ASC, President pro-tem, opens gifts presented to American Society of Cinematographers by Japanese Society of Cinematographers' President Hiroshi Kusuda. Linwood Dunn, ASC, and Ernest Laszlo, ASC, are also seated at head table. (BELOW RIGHT) Michiko Suzuki interprets Cortez' remarks for the Japanese guests. (UPPER RIGHT) Michiko Suzuki, Linwood Dunn, ASC, Yaeko Hirano and Hiroshi Kusuda, JSC, pose for the ubiquitous camera.



pher magazine to compare notes.

That evening, before catching their plane to go East, the Japanese group took some of the A.S.C. members and staff to dinner at the Yamashiro.

The delegation from Japan consisted of Hiroshi Kusuda, President of the J.S.C. and a cinematographer who has photographed all of Keisuke-Kino-Shita's features; Kuratara Takamura, a member of the J.S.C. board and a cinematographer under exclusive contract to Nikkatsu Studios; Saburo Sato, a cinematographer for Taei and Nitto CF Productions; Hiroshi Murai, a favorite cinematographer for both Kuchi Akamato and Yasuzo Masumura; Tetsuya Fukuda, a documentary cameraman and owner of CF Productions on assignment in the United States; Ryuchiyo Kiyatake, a documentary cameraman and owner of a rental studio; Hiroshi Machida, Editor of the Japanese Cinematographic Journal; Asakasu Arai, Yoshitaka Mori, and Yakui Shirota, Sustaining Members of the J.S.C. and lab technicians and Junichi Miyamoto, manager for Nagase Industry.



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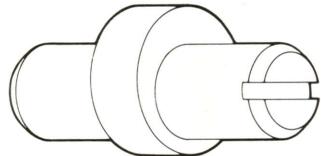
Engraved Arrows and Eccenters:

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Part of one 16SR module: inside the rear half of the camera housing. Aperture is visible at lower left. In center: white

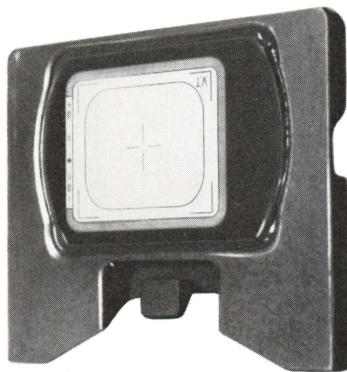
arrows next to ecenter slots show the technician how each ecenter affects the positioning of the fiber optics screen.



This is a drawing of an ecenter. It's a metal shaft with a circular bushing halfway along it. The bushing is positioned off center—eccentrically.

In the photo at left below, you can see three eccenters end on, with their screwdriver notches facing you. Each ecenter is partly hidden behind a slot. Each slot has a double-ended white arrow next to it, or crossing it.

The 16SR fiber optics screen, in its frame mount, is set horizontally in the mount holder above the aperture. When a technician turns one of the eccenters with a screwdriver, the eccentric bushing moves the mount holder.



Fiber optics screen in steel frame mount.

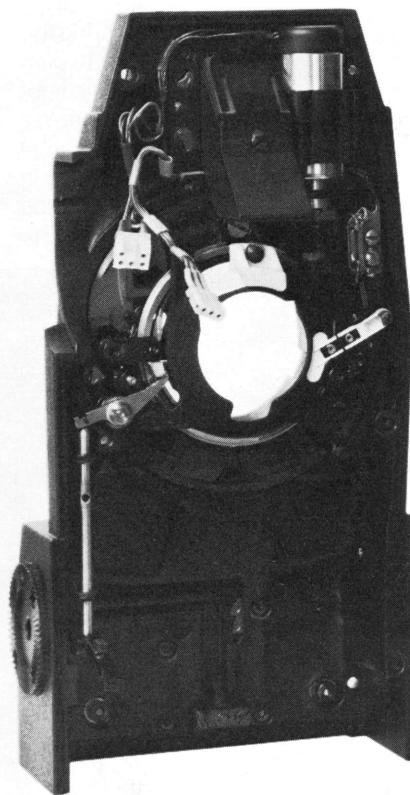
What the arrows mean:

The right-hand arrow points up and down. Turning that ecenter moves the screen mount holder up and down—moving the fiber optics screen in and out of focus.

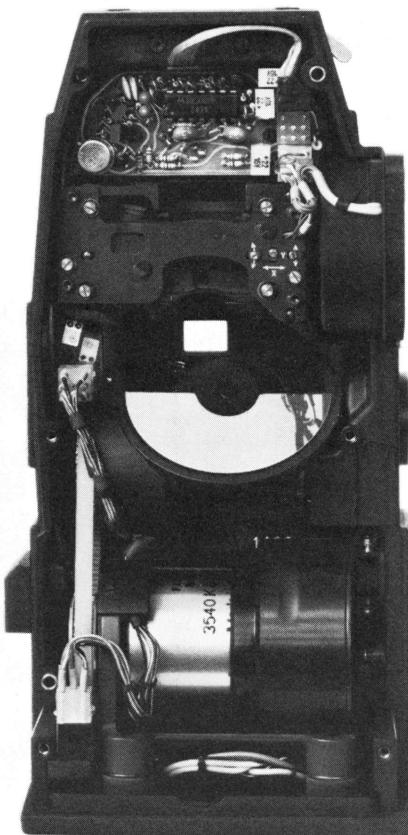
The center arrow points left and right. Turning that ecenter moves the mount holder (and thus the fiber screen) from side to side—so what you see at the eyepiece matches what the film sees at the aperture (parallax).

The left-hand arrow has a curved vertical shape. Turning that ecenter tilts the mount

Technology of the 16SR/One of a Series



Inside two halves of 16SR camera housing (see white arrows on one at right). Housing halves are two of fifteen modules. The



modular idea: they're quickly separable for service; and built in adjustments ensure precise compatibility of every module.

holder (and screen) so focus is uniform from edge to edge.

Why they're engraved:

The white paint can be stencilled on the metal surface. Or the arrow forms can be engraved and the grooves filled with paint. Engraving is the better way.

Why eccenters:

Any groundglass must be adjustable for focus, parallax and tilt. With every other 16mm camera, you have to use shims—layers of thin, compressible foil. Adjusting an eccenter is both faster and more definite.

It's also more permanent. When you adjust Eccenter Three, it doesn't alter the settings of Eccenters One and

Two. You can zero in systematically and logically on the final setting. Then it stays adjusted.

Zero-tolerance interchangeability.

Measured in microns, no two artifacts are exactly alike. But the 16SR fiber optics screen mount is built to tolerances closer than a lens mount. Any ARRI mount lens will fit any Arriflex camera. Any 16SR fiber screen mount will fit any 16SR. If the screen is replaced, focus almost certainly won't need to be re-set. But if it does need it, that's easy: 16SR modules are adjustable.

Time is money and will continue to be.

When you buy a camera, you know the purchase price.

But you don't know what skilled service labor will cost three years from now. You don't know what it will cost to rent another camera while yours is being worked on, three years from now.

Modular saves time.

All cameras need routine maintenance. The 16SR's modular design and precise settings make adjustment quicker and more positive. *The camera stays adjusted longer.*

Repair is quicker, too. The 16SR is designed to be dismantled easily; and a malfunctioning or damaged module can be replaced immediately, from stock. The fact is: The 16SR is the most sophisticated 16mm camera in the world. It's also the simplest to service.



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"THEY WENT THATAWAY!" - IN NEW JERSEY

By FRANK CURSLEY

Gen. Mgr., INTUITION, INC., York, PA.

The original assignment was to create audio visuals to introduce five speakers at Bard Parker's recent Annual Sales Meeting in Monterey, California.

Bard Parker's ad agency, Intercon Barmak, had already selected the theme of the meeting—"Take Charge in '80"—and had decided on a western motif for the meeting. The sales staff would be given western jackets and cowboy hats, there would be a chuckwagon dinner, and the western theme would be carried out throughout the meeting.

Because the budget for the audio visual portion of the meeting was under \$15,000, we originally planned on using a multi-image slide presentation to introduce the speakers and to illustrate their talks.

For each speaker we had created a character that would tie in with his speech, as well as be funny. The first speaker was the Director of Sales, Matt Carroll and the character created for him was a prospector who hit it rich. The second speaker was the Director of Marketing, Dan Kollin, who was presented as a sheriff who takes charge when a barroom brawl breaks out. Another speaker was a Product Manager, George Cicalas, who is responsible for a system of products. The character created for him was a gambler who has a system, and wins big. Another speaker was Ed Lanoue, a product manager responsible for the U-MID line of products which is promoted as a full line of respiratory care products. We made him a cafe owner with a full line of food and drink. The President of the company, Bill Clark, made several unexpected cameo appearances as a bartender with a false mustache.

The idea was to show the multi-image introduction and then have the speaker appear on stage in the same costume he wore in the show.

As we developed the concept, we became convinced that what was needed to do justice to the scripts was a motion picture, not a multi-projector slide presentation.

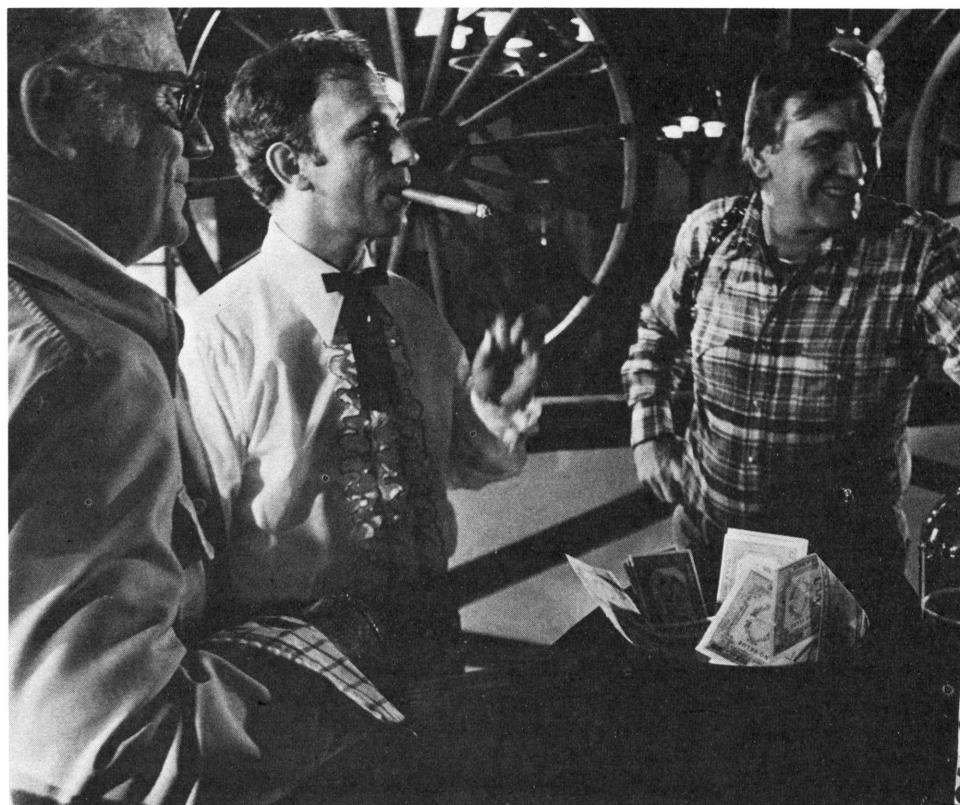
Since the agency had budgeted almost \$4,000 to rent some very sophisticated multi-image projection equipment and operators to show the multi-image shows, we decided to do all five introductions as motion pictures and eliminate the rental charges with the exception of a 16mm film projector.

Even with the extra \$4,000, we were on a very tight budget and the scripts called

On a shoestring budget a company-sponsored series of clever miniature Western films to launch an annual sales meeting in an imaginative way

for some very tricky shooting, such as a stuntman leaping on a horse and galloping into town, a barroom brawl, guys being hit over the head with breakaway bottles, and other scenes that were tricky to shoot—plus a cast of business executives with no acting experience.

Obviously, if we were going to bring the film in on budget, we would have to plan very carefully and work to a very tight schedule. Another problem was time. We planned to shoot the entire production at Wild West City in Netcong, New Jersey in one day—Wednesday, October 5th, the



Producer/Director Frank Cursley (right), seen with George Cicalas, the gambler with a system, and Len Barmak, President of Intercom Barmak, Bard Parker's ad agency. (BELOW) Cursley "slates" an MOS shot. Said Cursley, "We tried to keep the set very relaxed and to create the feeling among the talent that making films is fun."



earliest we could schedule the "cast"—and the finished films were due on October 25th, 16 working days later.

Because we had well over a dozen scenes to shoot, we scheduled a 7:00 AM call for the crew and an 8:00 AM call for the Bard Parker executives. We arranged with Wild West City to serve breakfast and lunch, so that the talent could eat when they were not being filmed. We polished and tightened the scripts and worked out a detailed shooting schedule so that not a minute of location time would be wasted.

We planned to use two camera crews. One camera concentrated on shots which could be carefully planned and controlled (mostly exteriors) and used a tripod. The other cameraman shot hand-held using the Frezzolini light-weight camera.

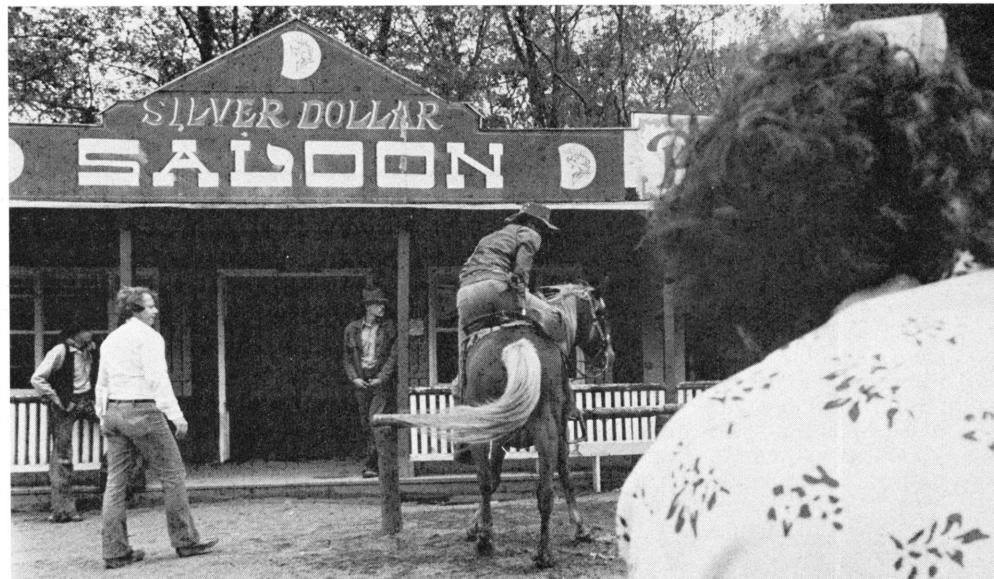
Because of the budget, we had to use very small crews. One crew had a cameraman and director who doubled on sound. I directed the other unit, which consisted of a cameraman and soundman who also shot production stills. At one point, I shot stills and did sound in addition to directing.

We had also arranged with the management of Wild West City to prelight the interior of the saloon the night before the shoot. The saloon had two separate areas, a large space with tables where the gambling scene and the barroom brawl were to be shot, and the bar where a number of other scenes were to be filmed. We pre-lit both areas with four focusing 2000 Colortran and two focusing 1000 Lowel lights and a Lowel soft light. The balance of the scenes were exteriors shot at a number of different areas.

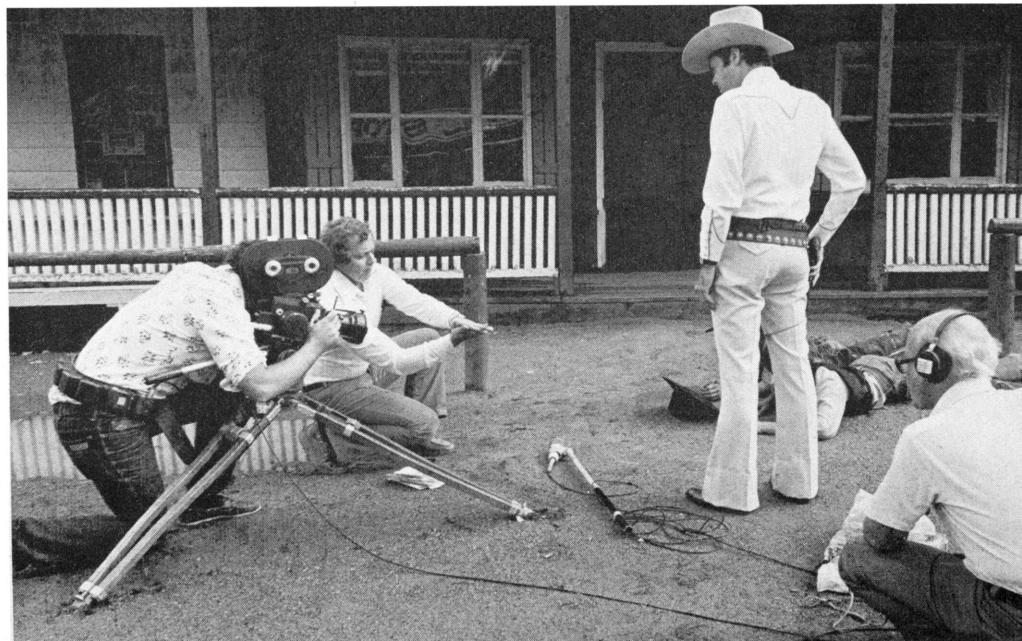
When we arrived to start filming we were greeted by a tremendous rainstorm that delayed shooting the exteriors by more than two hours in the morning and returned again for over an hour in the afternoon. There was a comical side to the bad weather, however; one of the scripts calls for Product Manager, Bill Fitzgerald, to be Black Bart, a feared desperado who gets religion and turns into a good guy. While we were filming the scene the skies were gray, but just as Bart got religion and looked toward the heavens, the sun came out directly behind his head. Fortunately, the scene was shot hand-held and the cameraman was able to get a terrific low-angle shot with beautiful sun spots shining through as Bart looks beatifully up to the heavens.

One interesting sidelight of the production was the sixth film we created the day of the shooting. We had been talking about renting a film to show at the dinner to be held on the last day of the meeting.

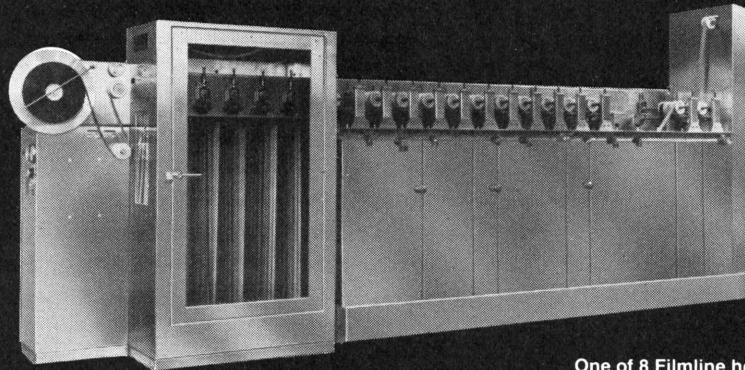
Continued on Page 847



Sales Director Matt Carroll dismounts, as second unit director Bob Rohm looks on. (BELOW) Rohm does a hand slate, as Marketing Director "Sheriff Dan" prepares to take charge of a barroom brawl. Producer/Director Frank Cursley doubles on sound.

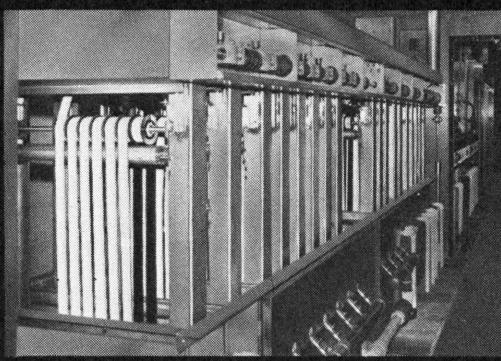


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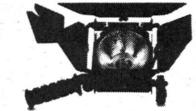
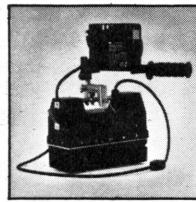
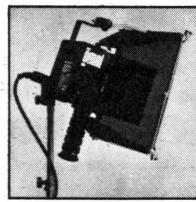


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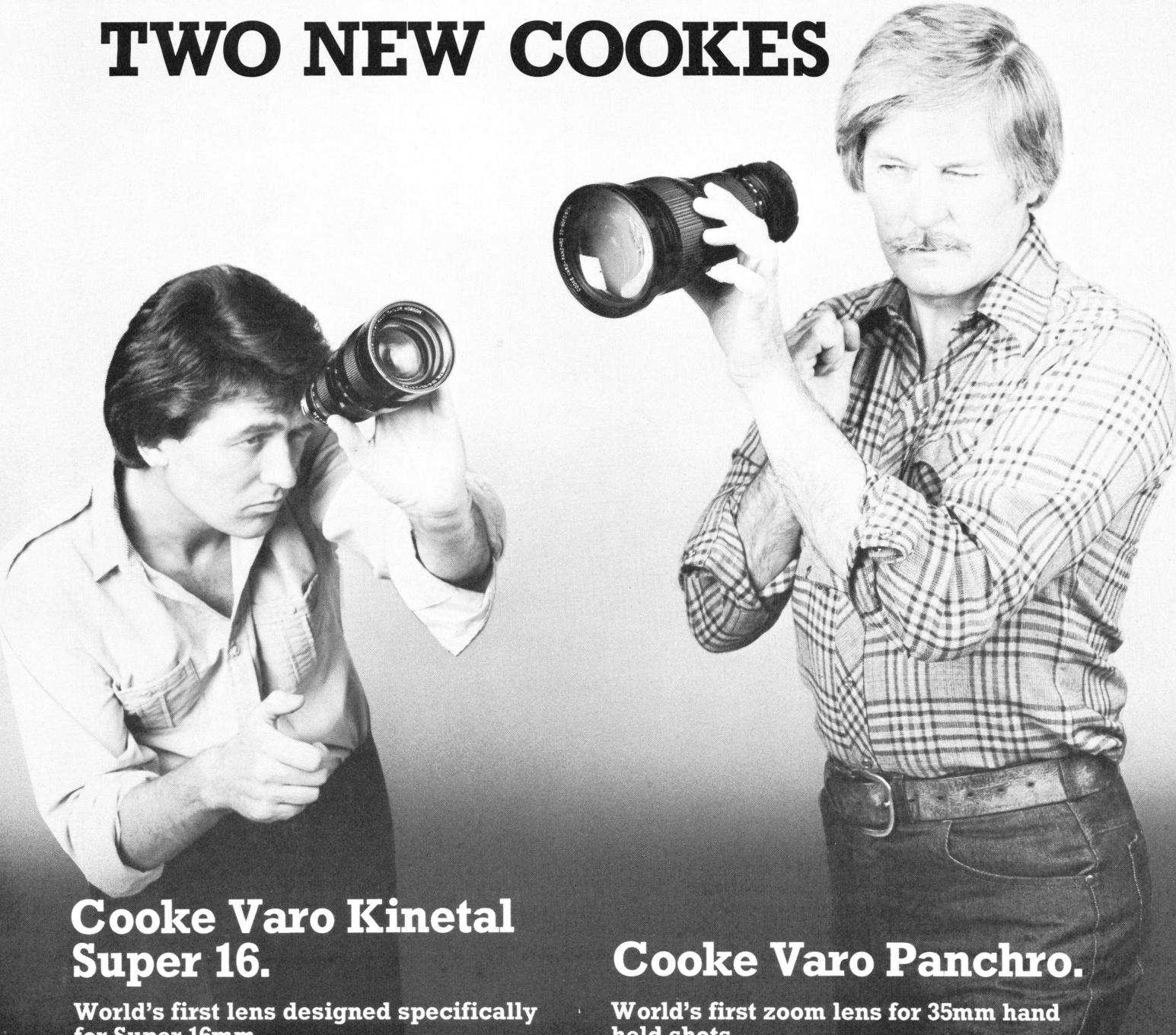


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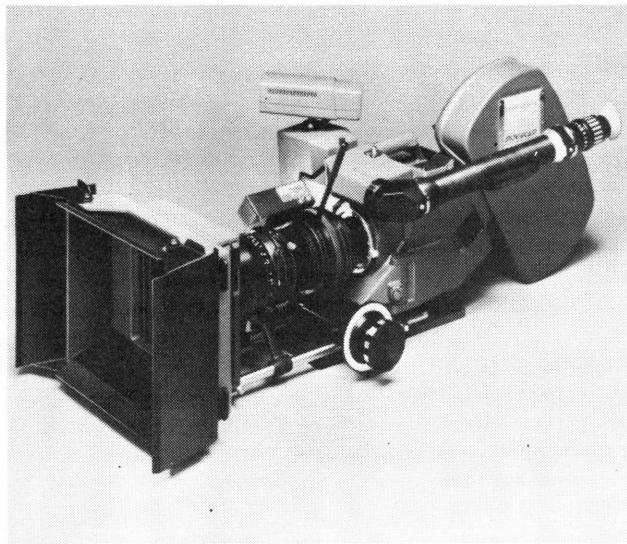
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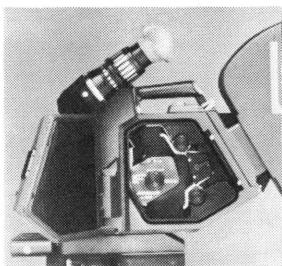
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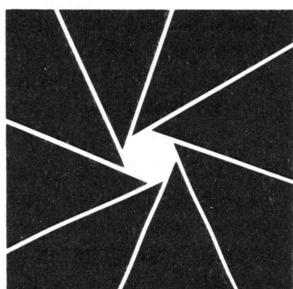
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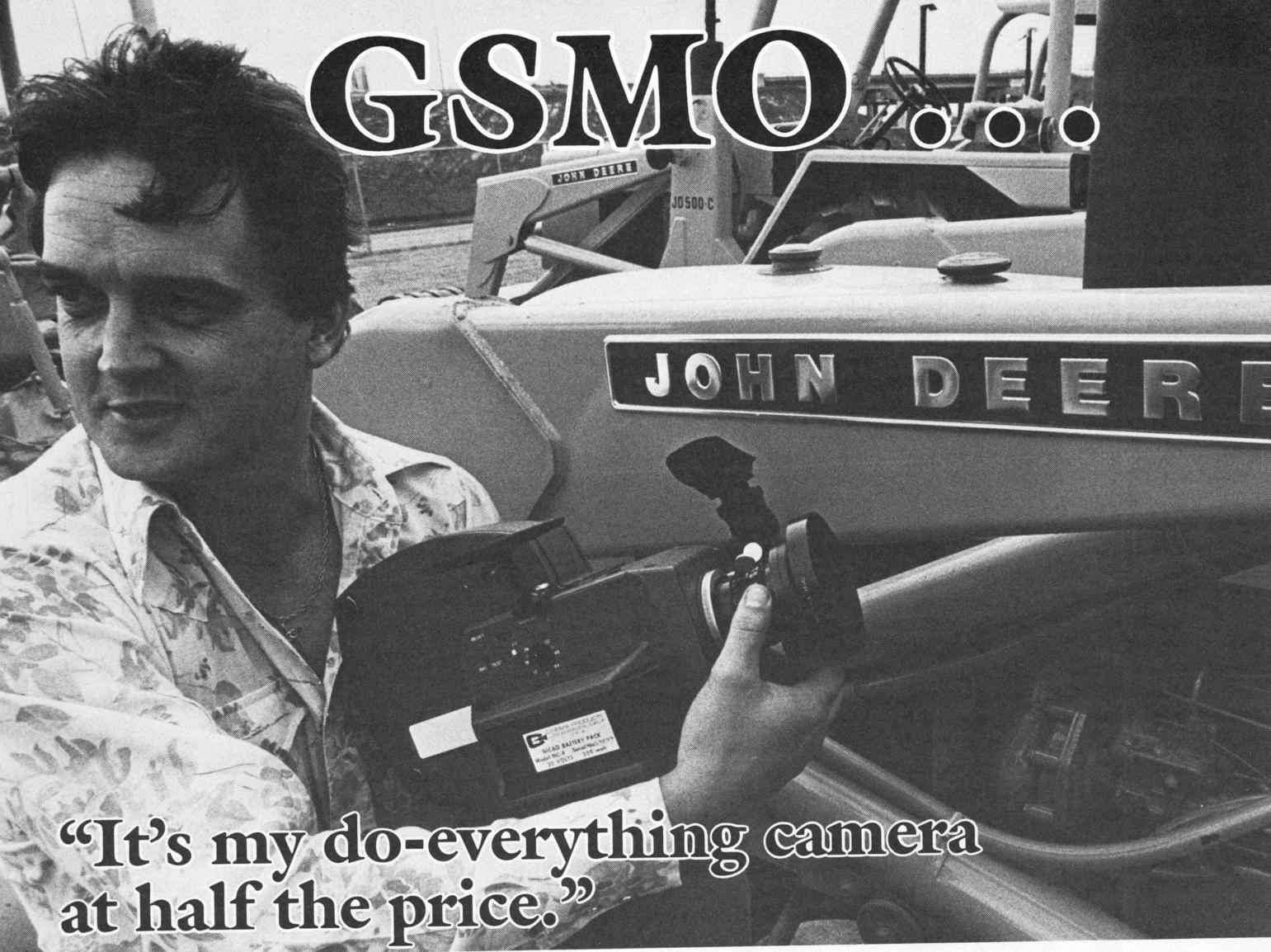
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**MOTION PICTURE SEMINAR
OF THE NORTHWEST
Continued from Page 793**

FILMING THE OLYMPICS. Mr. East shows his film, a lyrical, impressionistic treatment of the skiing events at the Lake Placid Winter Olympics cut to varied movements of classical musical. Devoid of dialogue and relying solely on the impact of images and music, it is a delight to watch.

Director Richard Rush, a filmmaker of vast Hollywood experience, shows an excerpt from his latest production, *STUNTMAN*, and this turns out to be a mind-blowing experience. The excerpt comes over with such jack-hammer impact that I can hardly wait to see the rest of the picture. Mr. Rush himself is a dry-humored realist who gives the audience a graphic description of what it takes to get such a production onto the screen.

Next up is one of Hollywood's most

luminous actresses, Stella Stevens, who speaks on *AMERICAN HEROINE: AN ARTIST'S SEARCH FOR HER IDEAL*. Miss Stevens shows an excerpt from the film which she, in her new-found role of producer, has been putting together and which features outstanding women in many walks of life. She then tells about the trials and joys of being on the other side of the camera.

Miss Stevens is followed by another illustrious lady, famed screen-writer Fay Kanin, who is currently President of the Academy of Motion Picture Arts and Sciences. She screens an excerpt from her much-acclaimed television feature, *FRIENDLY FIRE*, which she also co-produced and explains how it feels, as a writer, to finally have more control over what happens to her script in its translation to film.

Cal Bernstein speaks next on *HIGH ANXIETY—TV COMMERCIALS IN A NERVOUS ECONOMY*. Mr. Bernstein knows whereof he speaks, being President of Dove Productions, one of Hollywood's most prestigious commercial production houses. One gets the distinct impression that there are even more ulcers in that phase of the industry than in feature production.

The luncheon speaker, addressing a large audience in the Convention Center, is famed Hollywood producer/director Roger Corman. His topic is listed as *THE ABILITY TO SPOT NEW TALENT* (at which he is the film industry's top expert), but he ranges more widely into the changing Hollywood scene and the way the film industry has metamorphosized in light of such developments as television, cable TV, satellite, disc and cassette distribution. An unpretentious and whimsical speaker, he charms the audience with his asides and anecdotes.

The first speaker in the afternoon session is Phil Lucas, on the subject of *IMAGES OF THE INDIANS: THE HOLLYWOOD STEREOTYPE AS PORTRAYED BY THE HOLLYWOOD WESTERN*. Mr. Lucas, himself an Indian, shows a series of film clips clearly indicating how Indians have been maligned on the screen for years as bloodthirsty savages. While maintaining a light touch, he points out this injustice most graphically—and the audience is vociferously on his side.

Next up is Bob Stabler, speaking on the autobiographical subject: *THE HOLLYWOOD PRODUCER TRANSPLANTED TO CANADA*. Mr. Stabler is one of those who has opted to leave Tinseltown for saner climes and a more rewarding life style. His detailed description of that transition is most interesting. The next speaker is another very close friend, the

Among the guest speakers from Hollywood on the program were Cinematographer Vilmos Zsigmond, ASC, and Director Michael Cimino, who worked together on *THE DEER HUNTER* (for which Cimino won the "Best Direction" Oscar) and the upcoming *HEAVEN'S GATE*. Zsigmond won his Oscar for photographing *CLOSE ENCOUNTERS OF THE THIRD KIND*. (BELOW) On behalf of the Seminar, Laszlo Pal, Chairman of the event, presents a beautifully decorated birthday cake to American Cinematographer Editor Herb Lightman, Moderator of the Seminar.



Continued on Page 836



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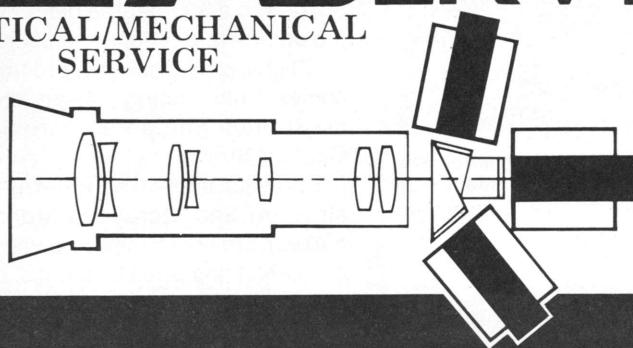
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FILMING "CHRISTMAS LILIES OF THE FIELD" IN UTAH

By BOB FISHER

It's only 60 miles from the hustle and bustle of downtown Salt Lake City.

The dirt road leads to a small hill where only a few tall cacti break through the floor of the desert. The sky is bright blue with only a few plumes of white clouds hanging in the air.

The quiet is pervasive. If you look hard, you can see occasional cars moving along the far-off highway, but any noise they make is swallowed by the desert air. No planes fly overhead. The land belongs to the Utah National Guard, and they have cleared the airways.

It's already early afternoon, which is a late start for the cast and crew working on the production of *CHRISTMAS LILIES OF THE FIELD*. "We shot late last night," explains director of photography Robert Hauser, ASC.

Now, Hauser is standing in the middle of the outdoor set that the Osmond Entertainment Center constructed for the production of *CHRISTMAS LILIES*, a TV special based upon Ralph Nelson's Academy-award-winning feature film, *LILIES OF THE FIELD*. The TV special (aired by NBC on December 16, 1979) picks up where the feature film left off.

Billy D. Williams plays the role made famous by Sidney Poitier, and Maria Schell is the nun raising the orphans on a remote farm. Activity begins to bustle around Hauser, and he is mentally lining up his shots for that afternoon.

"This is the first L.A.-sanctioned (Local 659, International Alliance of Theatrical Stage Employees) film done in Utah. It was scheduled to shoot in 23 days, but we'll bring it in in 19," he says, more than

a little pleased by that prospect.

Hauser is getting anxious to start shooting, and his glance roves over the compound, which includes a small farmhouse, complete with adjoining barnyard and animals, a rural church and a camper. "We'll shoot 95 percent of the film right up here on the hill," he says, "working out of the new model cine-mobile. The other scenes are at practical locations in Salt Lake City. We shot at the Federal Building and also in a private home."

Hauser turns his attention to Nelson, who is directing the television special, and goes to work.

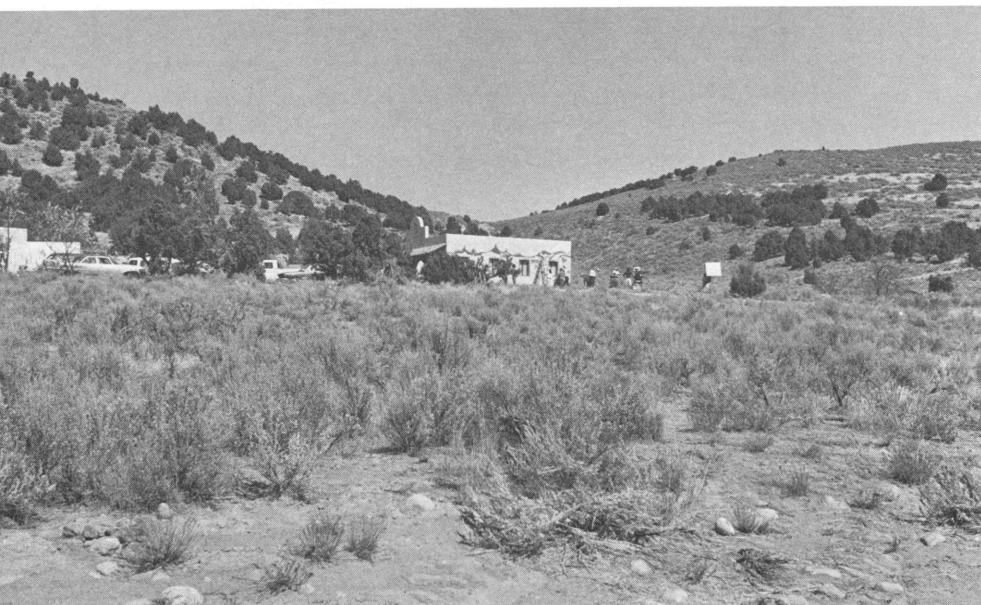
There is nothing new about movies being produced for television or at practical locations. In fact, the original *LILIES OF THE FIELD* was one of the low-budget feature films produced during the mid-1950s that sparked the use of natural locations for establishing moods and controlling costs.

What is new is that this film is being produced by a Utah-based company, using a mainly Hollywood crew, and working out of a facility that was originally designed for the production of videotaped variety programs. The Osmond Entertainment Center is the house that Donny and Marie built in Orem, Utah, in October 1977.

The center is designed for fast, efficient and creative production of the most elaborate videotaped programs. It features a 17,000-plus-square-foot sound stage with a 360-degree black cyc allowing complete freedom of camera moves and lighting angles. The preset lighting comes from state-of-the-art computer-controlled equipment provided by Century-Strand.

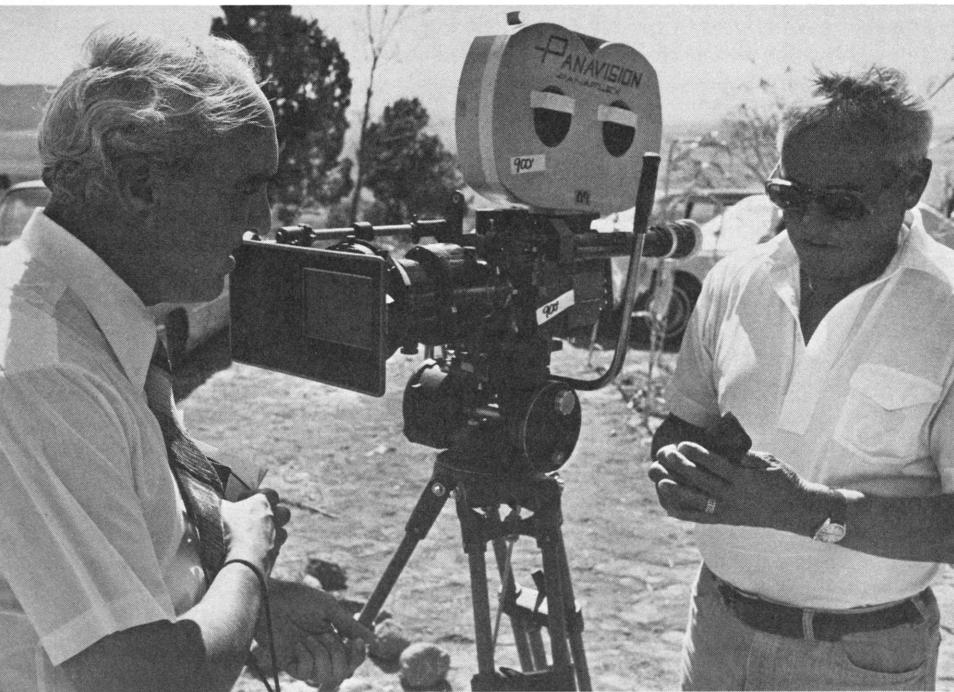
Such vital support services as set construction and storage, wardrobe and makeup are only footsteps away from the stage. Nothing is left to chance, even the part that live audiences play in the production of many entertainment programs. Some 280 seats can be hydraulically rearranged in at least 16 configurations in just a few moments.

Other production facilities include a large rehearsal hall, dressing rooms, a portable ice skating rink and such support services as carpentry, electrical and special-effects shops. The same attention to detail went into the planning for and outfitting of the postproduction center. "Remember, the Osmonds started in the music business, so it stands to reason that our sound recording and editing



A National Guard site located some 40 miles from the Osmond Entertainment Center was the location for the *CHRISTMAS LILIES OF THE FIELD* set. The Utah Film Commission helped arrange for use of the site. (BELOW) The permanent set for the TV Special was built on concrete slabs, so it could be moved if the feature film became a series.





Director of Photography Robert Hauser, ASC, (right) meets with Eastman Kodak Company field representative Bob McMurtrie on the filming location. The Osmond Entertainment Center is a facility that was originally designed to shoot videotaped specials, but now its capabilities have been extended for full-scale shooting on film, as well.

studios are among the best," says chief engineer Pat Brennan. "We can produce 24-channel Dolby sound."

Facilities for editing videotape rival anything available at any of the networks," adds Cal McWhorter, vice-president in charge of studio operations. McWhorter, and most members of the key technical staff, ranging from set designers to engineers, video camera operators and postproduction specialists, migrated from TV stations and studios in the Los Angeles area.

There are some 60 persons on the permanent staff, which swells to 300 when major productions are ongoing. This includes a strong base of local talent and technical staff. "Several other movie companies are based in Utah and many independent productions are made here," notes Jack N. Reddish.

Reddish is line-producer and production manager for *CHRISTMAS LILIES OF THE FIELD*. He moved "home" to Utah after working in Hollywood for 27 years, and he says that the filmmaking activity is more than enough to keep him busy.

"The Utah Film Commission is very aggressive, and the local people are cooperative," he points out. "Movie production is a clean, non-polluting industry, and it provides jobs for carpenters and electricians as well as performers and technical crews."

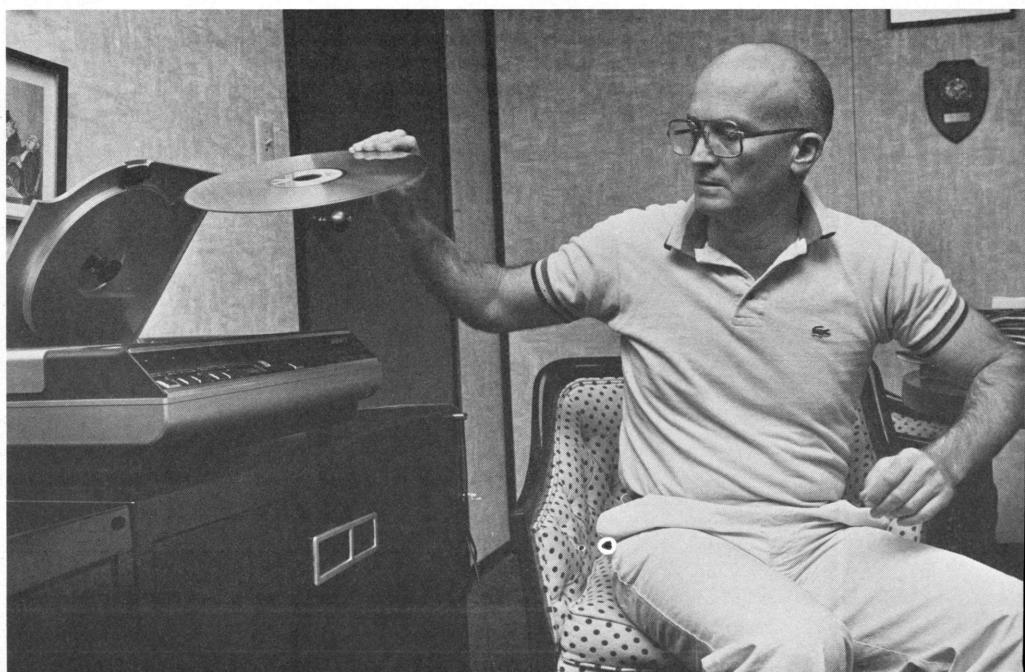
To find out why and how this ultramodern videotaping facility expanded into film production, we spoke with Reed R. (Dick) Callister, president and chief

executive officer of Osmond Communications. The latter encompasses motion pictures, television and commercial production divisions, as well as publishing, sound recording and record companies.

"There were practical limitations as to the number of variety programs that we could produce for television so we got into the commercial production business," he says. "We simply wanted to put our people and facilities to work full-time."

This led the Osmond Entertainment Center into film production. "We discussed that it is a two-way street. There are a lot of things that you can do with film

Reed R. (Dick) Callister, president and chief executive officer of Osmond Communications, predicts that the video disc will spur production of entertainment films for home market release. Osmond Communications has already produced several pilot programs for a video disc release.



that you can't do with videotape, as well as vice versa," notes David Anderson, president of Osmond Commercial Productions.

"We found, for example, that many sponsors want a film look for their TV commercials," he explains. "We also wanted to take advantage of the many natural locations available to us for production in Utah. These range from mountains and deserts to Alpine forests. Film is often a much more flexible and cost-effective medium for producing on location. You don't want to haul a video camera up a mountain or take it into the desert during a dust storm."

Two staff cinematographers, Bill Sweeney and Arthur Pembleton, were hired by the commercial division. However, the marriage of the film and electronic mediums didn't really take hold until mid-1979, when a Rank-Cintel MK 3B flying spot color telecine was installed at the Osmond Entertainment Center.

"That is what really provided the opportunity for us to align our film production and videotape postproduction capabilities," Anderson explains. "We can shoot film and transfer the original—either positive or negative, 35mm or 16mm—to first-generation videotape. The transfer can be time-coded and synchronized for double-system sound."

"That allows us and our customers to preview commercials and films on a video screen, and we can also do either our rough edit or final post-production in the video format," he continues.

"Because of the gentle handling of the film, we encourage producers to transfer from the original rather than a duplicate," Anderson explains. "That results in a first-generation videotape copy which truly has a film look."

There are other advantages: For

example, frame-by-frame color corrections can be made with the scanner. However, Anderson and others at the Osmond Entertainment Center feel that the real key is the very high quality of the transfers made possible by the ability to work with the original film.

"I'd guess that most people are going to continue shooting 35mm color negative film for theatrical releases and for many national commercials," Anderson says. "However, my personal feeling is that you can now shoot anything on Eastman color negative II film 7247 that is going to appear on a TV screen, and the results will be very comparable to those from a 35mm original. The tape transfers are that good."

"This has the impact of changing the economics in the planning for many commercials and industrial films that are going to be released in video format. The 16mm negative format should be the measure for comparing costs with videotape production," he says.

Because of the impact of the flying spot scanner, time has also ceased to be a factor in deciding between film and videotape production. "We had one situation where an automobile manufacturer needed 16 spots produced fast," Anderson recalls. "They gave us the storyboards on a Monday. The first of the

spots had to be distributed by the following Saturday. Previously, time alone would have dictated a decision to originate on videotape.

"However, it was obvious that the spots would benefit from a film look. There was no problem. We shot color negative and flew it to Hollywood for processing overnight. We got the film back the next day, and transferred the originals to videotape for editing and distribution. No time was lost."

In 1979, the commercial division produced some 10 educational films for clients, ranging from the U.S. Postal Service to Encyclopedia Britannica. Anderson anticipates doubling that volume in 1980. TV commercial production is also on the rise. "Most of our commercials are now originated on film and edited in the video format, and some two-thirds of this work is now produced on 16mm color negative film," he says.

Meanwhile, the Osmond Production Center has become a prolific core of production for entertainment features. This includes two 1979 theatrical features with another already planned for 1980, a couple of pilot projects for video disk distribution, and a number of pay TV programs. Commercial television also holds great promise.

"I'm going to be very disappointed if

we don't have at least two regular series on the air by the Fall of 1980," he says, listing CHRISTMAS LILIES OF THE FIELD high on the list of prospects.

Of course, not all of the related production work is being done in Orem, or even in Utah. "Hollywood is still where it's at in the entertainment film industry," Callister says. "We have offices there as well as in New York, and films are scheduled for production in various parts of the world."

If CHRISTMAS LILIES becomes a series, for example, plans call for production to be shifted to Arizona for weather purposes. "The permanent sets were built on concrete slabs so they can be easily moved," Reddish notes.

"Osmond Communications is people as much as it is facilities," Callister insists, "and we are attracting some of the very best in the business. For example, in Hollywood, we have Phil Berry, a proven Emmy-winner, who produced FRIENDLY FIRE and FIRST YOU CRY."

However, the Entertainment Center at Orem is the core. "The people and the facilities are first-class," says Reddish. "For example, the sets we built for CHRISTMAS LILIES are as good as anything that I have seen."

The availability of the flying spot scan-Continued on Page 848

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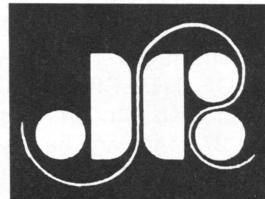
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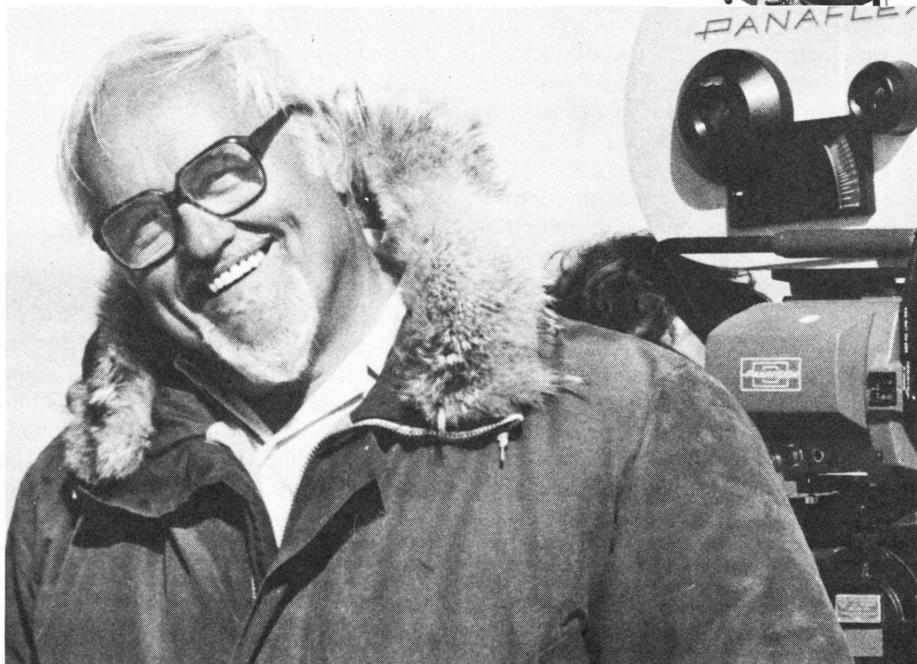
DIRECTOR OF PHOTOGRAPHY/LOCAL 659 PRESIDENT

FRANK STANLEY, ASC

EVALUATES PRODUCTION PERFORMANCE OF NEW LTM LIGHTS

"*East of Eden*" cinematographer finds LTM's wide range of HMIs provides exciting new flexibility, precise control, effects not achievable with other lights.

"In filming the seven-hour mini series '*East of Eden*' for ABC-TV," reports famed cinematographer Frank Stanley, "we shot much of the action inside priceless historical homes of the 1800's in and around Savannah, Georgia, and in several California locales. Many of the rooms were very small, and everything in them was fragile and of inestimable value. There was no way we effectively could rig standard lights without damage to the beautiful old rooms, and the heat output in those confined spaces would have been unbearable. Instead, we used all LTM HMI lights, and I can't say enough good things about them. They're small, lightweight and easy to handle. We used bounce light for most scenes, which gave me all the light I could use. I was able to shade and temper the lighting as I wished, with the greatest flexibility and ease of any lights I ever have used and no least problem in using colored filters, gels, etc., when I wanted them. Thanks to the precise degree of control permitted by these LTM's, the candlelight effects we were able to put on film in the 1910 'high-class whorehouse' scenes are incredibly beautiful. The Softarc 575 is a special pleasure to work with; I used it on closeups throughout and in many other scenes of subtle character. We found no fluctuations at all in the LTM's and had ideal daylight temperature to work with all the way in both exteriors and interiors. It was exciting to see the entire cast and crew functioning at peak level in even the most crowded interiors, because the coolness of the LTM lights kept everybody comfortable and alert. There's so much that can be done with these lights that simply could not be done before that it's like an entirely new dimension has been added to motion picture photography."



Cinematographer Frank Stanley used LTM's throughout production of the seven-hour ABC-TV mini-series, "*East of Eden*". He was delighted by their consistent daylight

Director of Photography Frank Stanley is a man who truly loves his work and looks forward eagerly to each new opportunity to create exciting visual effects that have not been seen on the screen before. Just one example is his incredible photography in "*The Eiger Sanction*"...shots that were flatly impossible before he and his mountain-climbing camera associate, Mike Hoover, devised the special equipment and techniques to accomplish them. The foundation of Frank's imaginative and spectacular screen imagery was laid when he began his film career as a lab technician at Technicolor in 1946, in the early days of Eastman Color and Vista Vision. His unique talents soon became evident, and he contributed many of the beautiful and complex opticals to C.B. DeMille's "*Ten Commandments*", among others. He

caught the camera bug and moved to Disney, starting in the loading room, with the firm determination to become a Director of Photography. In 1960, he went to Africa with cinematographer Russell Harwin as assistant cameraman. The association proved so pleasant and productive that they stayed together for nine years following. They shot "*Darling Louie*" for Blake Edwards in 1968 and, impressed by Frank's rare skill and artistry, Edwards made him a Director of Photography on "*The Wild Rovers*" in 1970. From there on the career of Frank Stanley is legend, with one winner after another: "*Magnum Force*"..."*The Eiger Sanction*"..."*Ten*"..."*Wholly Moses*", etc., etc...each a unique and exciting visual experience marked by the fresh and innovative style of a master of his craft.

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BUILDING UNIQUE SPECIAL EFFECTS FOR "XANADU"

By R. GREENBERG

R/Greenberg Associates, Inc. is a graphic animation and special optical effects production company that started operations in New York City in 1977.

During its first year of business Greenberg Associates concentrated primarily on bottom-lit, in-camera animation generated from transparencies, kodaliths, mattes and gels. Its design capabilities were derived mostly from procedures commonly found in print or graphic design studios. Clients were advertising agencies, production companies, national, local and independent networks and corporations. Feature film studios soon became a source of much of Greenberg's production work. After two years in business the reputation of R/Greenberg Associates, Inc. for its design and production of television commercials, end-tags, and special combinations of live-action had grown. A new area of production, feature film promotion, was successfully launched with the Greenberg's application of commercial graphic techniques to promotional trailers. *SUPERMAN*, *ALIEN*, *ALL THAT JAZZ* and *THE EMPIRE STRIKES BACK* are among the many promotional campaigns produced by Greenberg Associates.

Greenberg's involvement in *XANADU* started when Universal Pictures producer Joel Silver became interested in the promotion campaigns and opening title sequences for *SUPERMAN* and *ALIEN*. Mr. Silver was beginning production on a new musical feature, *XANADU*, starring singer-dancer Olivia Newton-John and Gene Kelly. Knowing that *XANADU* would incorporate a great deal of specialized optical sequences, Mr. Silver wanted to bring an effects company directly into the production dur-

ing the pre-production stage instead of after completion of principal photography. He also believed that important special effects sequences could be an essential part of the film's promotion.

With the short production schedule and the ever-increasing number of effects sequences, Mr. Silver's vision proved invaluable.

The following article explains some of the major special effects and how they were achieved.

XANADU, very simply stated, is the story of a Muse or Goddess who comes down to earth to give an aspiring artist (the hero of the film) one dream come true. His dream is to build the ultimate pleasure palace: *XANADU*. It is important to establish early in the film that the Muse, played by Olivia Newton-John, and her eight sister Muses possess qualities which separate them from ordinary mortals. Space and time do not exist for them. They can materialize or dematerialize at will.

The opening sequence shows the artist-hero hard at work on a series of drawings. He becomes dissatisfied with his efforts and tears up his drawings and throws them out of his studio window. We follow this paper as it floats across roof tops.

Scraps of white paper were dropped from the top of a back-lit blue screen set-up and allowed to free-fall with the camera pivoted at 90 degrees so that on film the paper would appear to float across the frame. This was then matted into background shots of roof tops. The paper continued its flight until it fell in front of a warehouse wall on which nine women in a faintly classical setting had been painted in broad brush strokes. As

A musical fantasy feature inspires out-of-this-world effects which blend most unusual artwork with original styles of optical wizardry

the paper falls in front of the wall, one of the women or "Muses" begins to come alive and dance out of the painting. She then pulls another of her sister Muses out of the painting. The viewer watches each of the Muses come alive and dance in front of the wall. They then dance together in front of the wall and finally individually disperse into the landscape as streaks of light.

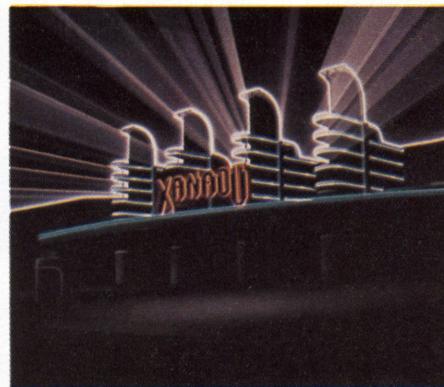
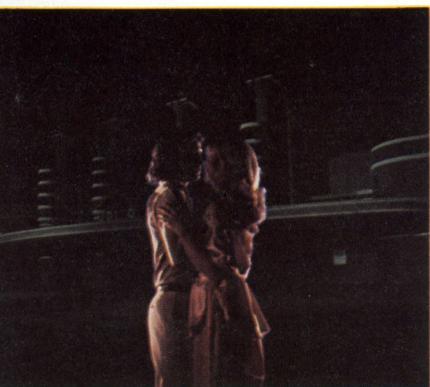
Nine dancers were used in the development of this sequence. First the dancers were arranged against blue screen in positions which approximated what the final painting would look like. This position was recorded as a reference onto 35mm film and simultaneously onto video tape. We then decided on the sequence that each girl would come off the wall. We then placed the first girl to "come alive" in front of the blue screen using her position, the position that was recorded on the video tape. She was then photographed going through her dance and exiting the frame. This was repeated for all nine dancers. The film was then edited using the nine pieces of film each confined to one dancer. This was accomplished by bi-packing the separate rolls of film together. A composite clip (all the women on one frame of film) was then built up.

The Wall

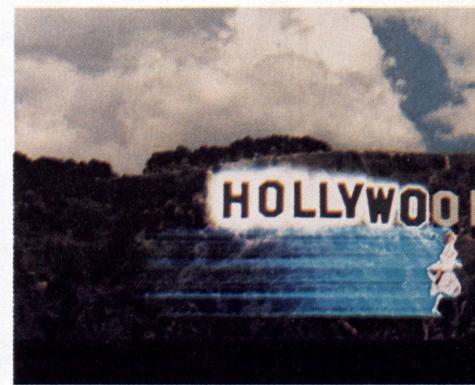
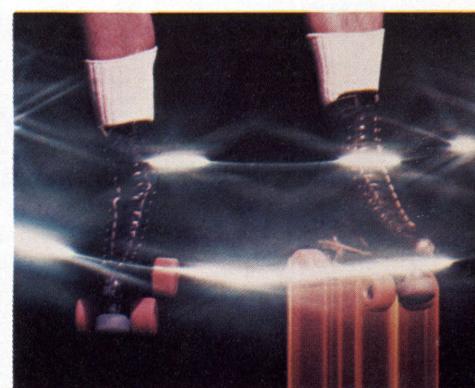
The main problem with the wall was matching the painting on the wall of the Muses to the nine positions and shapes of the nine Muses who were to come alive in the painting. Victor Kemper, ASC, the Director of Photography, set-up the shot so that there were two Keystone angles. Most process shots like this are shot straight on to make matching easier, but

Two views of the Art Department of R/Greenberg Associates Inc. in New York City. The company, which started operations in 1977, concentrated at first on bottom-lit, in-camera animation generated from transparencies, kodaliths, mattes and gels. It soon built a reputation because of the television commercials it created. Then came feature film promotion. Now the company has completed production on the "magic" for Universal's musical fantasy, "XANADU". (Black and white photographs by Rudolph Janu.)

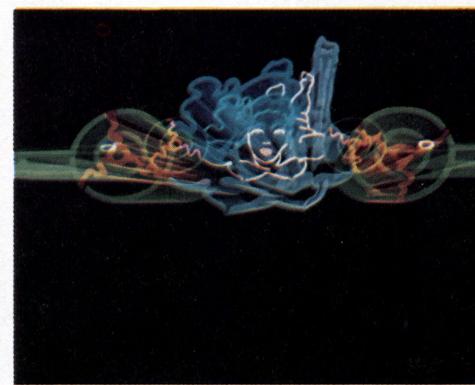
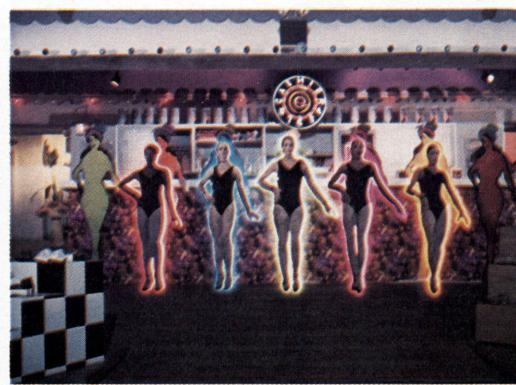


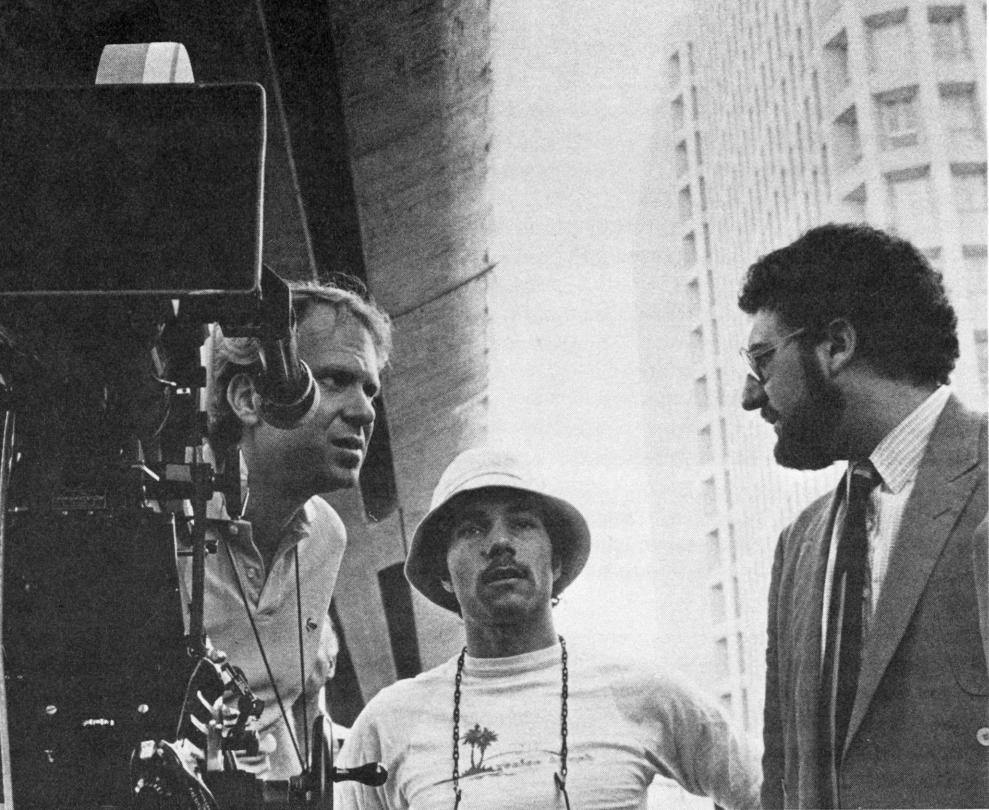


Progressive shots for a fantasy sequence in "XANADU". (LEFT) Olivia Newton-John and Michael Beck matted into painting of Pan Pacific Auditorium in Los Angeles. (CENTER) An airbrushed version of the Pan Pacific. (RIGHT) Pan Pacific transformed to XANADU without Olivia and Michael. (BELOW LEFT) Long shot of Sonny (Michael Beck) in Heaven with floor and force-field. (CENTER) A closer shot of Sonny in the force field. (RIGHT) Sonny unable to move his skates, due to the force field.



(LEFT) Stars fill the frame of spinning eyeglasses. (CENTER) Rotating glow of Gene Kelly starts from a rotoscope position. (RIGHT) Tail-streak shot separately and combined with actress who was shot blue screen. The background cloud footage was shot time-lapse and matted in. The Hollywood sign was shot separately and the letters animated on, as the runner passes their position. (BELOW LEFT) Transitional effect utilized for going from one scene to another. (CENTER) Glow effect removing woman from background in Fiorucci scene. (RIGHT) Streaking an image generated from an existing neon light.





On location for **XANADU**. Director of Special Effects Richard Greenberg with **XANADU** Director Robert Greenwald and Co-producer Joel Silver (Right). (BELOW) A section of the editorial department with various components for **XANADU** special effects carefully filed.



Victor wanted the shot to have a non-process feel, so we put the camera very low to the floor, off center to the left and very far back, so that we could see the street below the painting.

The only sure way to make a painting match a keystoned live-action shot is to project a clip of the live-action through the same lens and camera that shot the live-action at exactly the same angle and

distance and then draw it. The Panaflex camera had no means to do this, so Lou Ami at Universal built a projector that would accept a Panaflex 24mm Ultra-Speed lens.

Since nine Muses were shot separately blue screen, we had to make a composite slip of their start positions, being very careful to keep everything 1:1. Just to be safe, a 1.85:1 grid and field

chart was supered over the composite clip. The projected clip was then traced on the actual wall (outlines only) and at the same time the Muses outlines were also traced on a large sheet of paper. In Jerry Coebe's studio 8 X 10 paper prints of the composite clip were projected with an opaque projector and adjusted until the images filled the outlines exactly. At this point the detail was added to the Muses, which were painted on separate "skins". The separate skins allowed the Muses to come alive one at a time.

When placing the skins on the wall, the projector with the composite clip was set up to double-check the position of the skins. In addition, the 1.85:1 grid (supered in the clip) was marked on the wall. It was to the 1.85:1 grid markings that the camera angle and distance were fine adjusted. As it turned out, the wall painting negative required the same adjustments in size and tilt as a normal matte, or in other words, very little.

Close-ups of the Muses coming alive were also shot and lined-up in a similar manner with separate close-up clips and skins. The matching in this case was far less critical because we were dealing with only one Muse at a time.

Because all the girls were shot separately it allowed Dennis Virkler, the Editor, to pick the best takes and combine them in a tighter fashion than if they had all been shot at once. Combining all those mattes while maintaining everyone's proper blocking was extremely difficult, but again we carried the field chart all the way through the blue screen and combining process so we always had an exact 1:1 reference.

So, to bring a Muse alive in the optical, we simply dissolved from the painting with that Muse's skin on it to a take of the painting without her skin on it and at the same time dissolved in the matte of the Muse alive.

During this whole sequence the Muses have a glow around them. A diffusion filter was used to produce the glows. The mattes were sized through the diffusion filter, and then resized. This made the glow appear to be on the sides of the Muses rather than behind them. For the close-ups an interior glow pass was added to make the glow larger and less edge defined.

After the Muses come alive they dance around in front of the painting that they came out of. The entire dance sequence was shot blue screen for the sole purpose of putting a glow around the dancing Muses. Rotoscoping the dancers to produce a glow would never have looked as smooth as using mattes optically produced with the blue screen process. Again, different degrees of glow were used for the long shot, medium shots,

and close-ups.

All the mattes in the dance sequence were carried slightly soft. The field charts on each take allowed us to size the mattes to 1:1 even though they were out of focus. Soft edge mattes helped the glow blend with the dancers and also made the shadows of the dancers, which were picked up in the blue screen process, soft, as they would be in reality.

The shadows, normally something to be avoided in blue screen, were intentionally emphasized. They added another frame of reference and made the Muses seem like they are really part of the scene.

After the wall dance, the Muses run all over the city turning into streaks of light. For this a digitized zoom controller (built by Optical Director, Joel Hynek) was used to make time-exposed zooms of the matte elements produced optically for the live-action. The streak sources were produced either through the blue screen process (if they were shot blue screen) or through whatever type of separation process that worked the best with any given shot.

All the streaks were given tapers; that is, on any one single frame the head of the streak would be very bright with its tail tapering down to nothing, much like a comet tail.

Because the streak sources were produced from the live-action itself, its motion became that of the live-action. It turned out to be a very effective method for combining a graphic element with live-action.

As the film continues there is a scene in which an old auditorium had to be transformed into the hero's dream palace, Xanadu. The building was chosen because of its unique architecture.

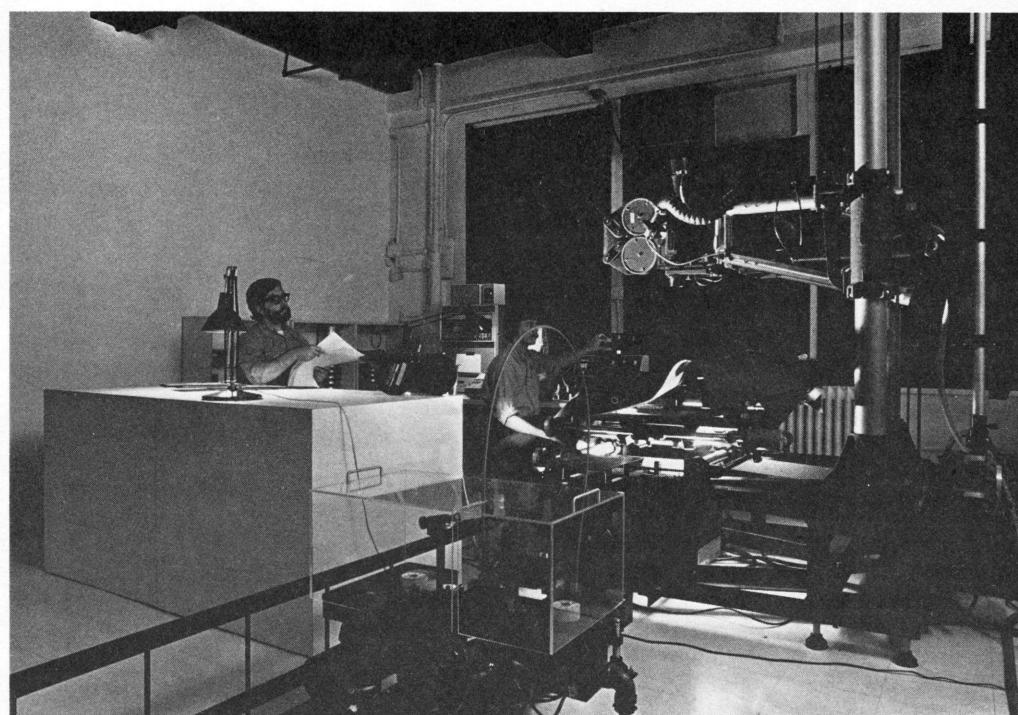
Footage was shot of the Pan Pacific Auditorium with a locked-down camera. From a negative clip a frame was blown up and a large color paper print was made. It was airbrushed and rendered with additional sections of the building that did not exist before. An 8 X 10 chrome was made of the newly redesigned building. Selected sections were separated from the chrome via handmade mattes and separation Kodak negatives and positives to form a neon light architecture. The actors were shot at the same camera angle as the building, but on a blue screen process. They were then matted in optically and danced across the screen while the transformation took place from the old building to the new structure.

The Muses were constantly disappearing throughout the film. Therefore, we had to develop different methods of removing the women from the scene. Following is a description of one way which

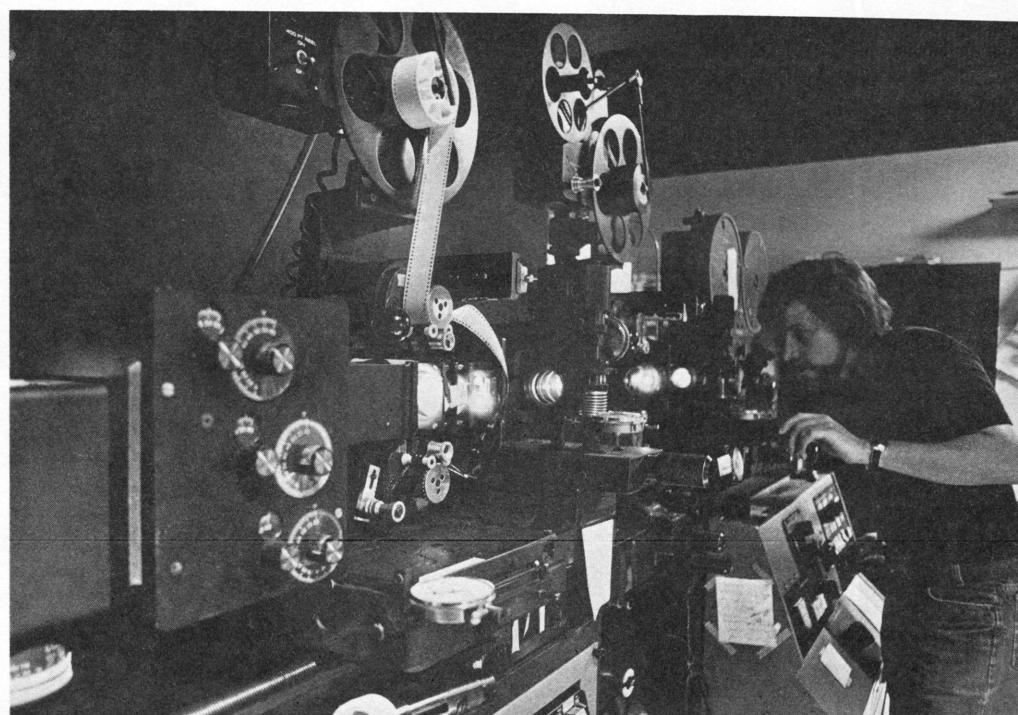
did not need to employ blue screen: Dancers were situated on a huge revolving platform with a floor that was changing colors in a kaleidoscopic pattern. Olivia Newton-John was positioned in the middle of all this and was the motivation of the transformation effect. She first starts to sparkle and beams of streaked light shoot from her towards the viewer. A soft edge traveling matte is used to reveal the Muses while the beams of light lift upward. The Muses, including Kira, are now revealed. The next problem is how to remove them completely. They were, however, not shot blue screen but footage was shot without the dancers on the platform. A precision print was made of the scene to be used for rotoscoping. The

eight Muses and Kira were traced from each frame of film in that section of the dance. Mattes were made of the rotoscoped drawings and matching Kodak negatives were made. This was needed to generate the glow and the transformation to beams of streaked light. The effects were shot on the animation stand in a matching field to the live-action. This was then combined on an optical bench. The effect is that the dancers while in motion start to glow and cross dissolve to the scene without dancers. During this dissolve the glowing image of the dancers streak upward and out of frame giving the effect that they do turn into light energy and leave.

While building "Xanadu" the hero sud-



Computerized animation stand with interlocked aerial image projection head. Key Stytzer directing. (BELOW) Joel Hynek, Optical Director of R/Greenberg Associates at work on optical printer. Because they are not the conventional illusions which use standardized techniques, the effects for XANADU had to be especially carefully plotted.





Robert and Richard Greenberg during special effects shoot. They were assigned this project because *XANADU* Producer Joel Silver became interested in the promotion campaigns and opening title sequences which they had created for *SUPERMAN* and *ALIEN*. He wanted to bring an effects company directly into the production during the pre-production stage.

denly loses his lover, Kira, (Olivia Newton-John) who is called to Heaven by Zeus. In order to reach her, Sonny (Michael Beck) decides to skate right into the large wall painting.

The "Heaven" scene was one of the more intriguing sequences in the Xanadu project. From the time that Sonny (Michael Beck) crashes through the wall painting, there were thirty-three different shots in the scene, including a single 300-foot take of Kira singing "*Suspended in Time*". The actors had been

shot either against black or blue screen, and the voice of Zeus was mixed into the track.

Our problem was to create a fantasy "Heaven" environment, complete with a representation of Zeus' voice, entirely by means of graphic animation and opticals.

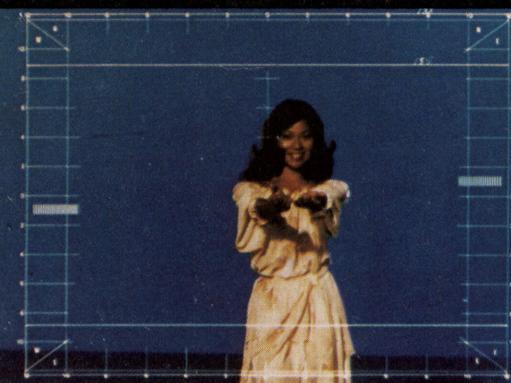
There were shots of the actors from several different camera angles, including overhead two-shots, which made keeping continuity in the animation quite a challenge. The 300-foot shot of "*Suspended in Time*" was a single continuous

camera dolly move, which we had to match with the animated background. There were many reaction shots in the live-action; reaction to animated effects that had yet to be created.

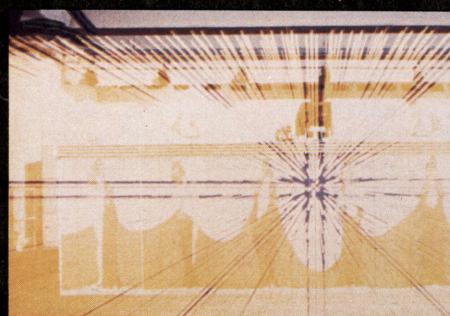
The first element needed was a "floor" of sorts; a device which could locate the actors in space, relative to each other, and be manipulated to maintain continuity. After many tests, a "tube streak" was chosen because it successfully indicated a near-infinite perspective, had pulsating colors and glowed with energy as, of course, a floor in heaven would. As importantly, it could be created in a way that simulated many different camera angles. The floor was produced entirely on the Oxberry computer-controlled animation stand. The art was a simple series of back-lit dots, with a multiple color panel. These dots were "streaked"; that is, open-shutter photography while the art and/or camera is in motion. In this case a combination of zoom, north/south and east/west motions were employed to produce the floor cycle.

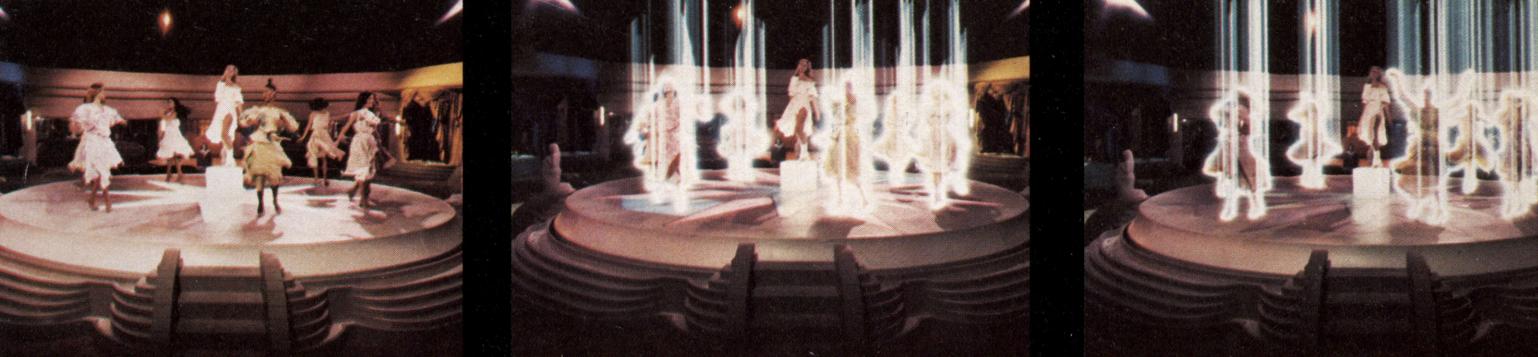
Different "moves" produced the different perspectives necessary to match the live-action footage. The "*Suspended in Time*" floor was optically zoomed and panned north, a 300-foot optical compound move on a computerized optical bench.

Once the floor was established, the other elements began to fall into place. Kira, being a Muse, of course, had to have a soft glow throughout the scene. She had been photographed against a blue screen, so mattes were pulled, and the glow was created by diffusing the

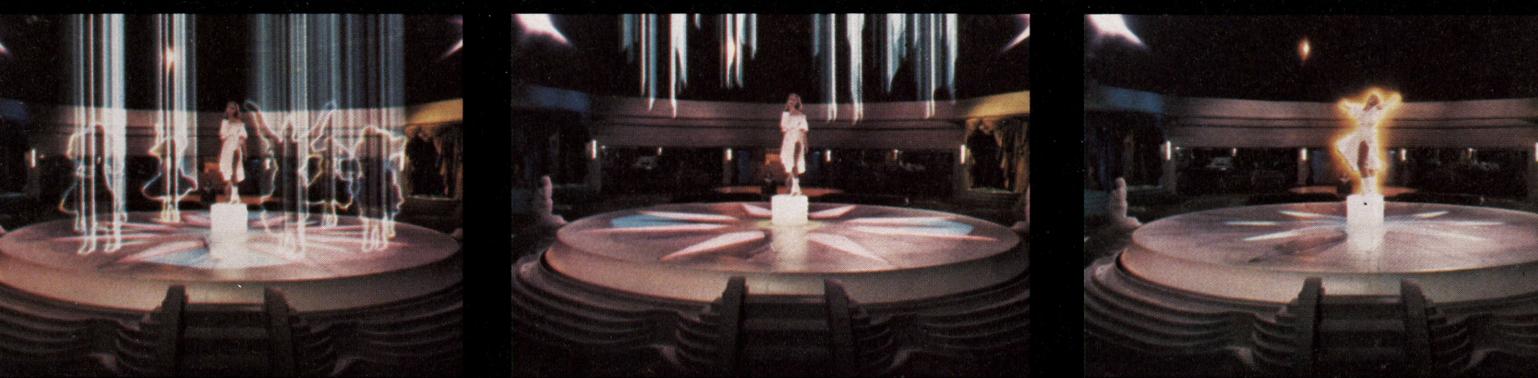


Various stages in the "Marilyn" sequence from *XANADU*. (LEFT) Medium shot of Marilyn carrying the grid. (CENTER) Closeup of Marilyn carrying the "skin". (BELOW LEFT) Blue screen matte shot of Gene Kelly exiting from six doors at one time. (CENTER) Transitional device to the next scene. (RIGHT) The transitional device filling the entire frame.





(LEFT) Olivia Newton-John, playing the role of a Muse named Kiva, shown on platform with dancers. (CENTER) The dancers begin to exit the frame by turning into shafts of light. (RIGHT) Muses leaving the frame, as Kiva sings. (BELOW LEFT) The dancer Muses continue to fade from the frame. (CENTER) Kiva remains, as just the light trails of the Muses are left in the frame. (RIGHT) Kiva now glows.



clear core matte in the rear projector of the optical bench.

Kira's streak into "Heaven" gave us the opportunity to explore the possibilities of the aerial image unit of the animation stand. Clear-core and black-core mattes of Kira were made on an optical bench from the blue-screen original. From these mattes, an outline was made of her upper half. Two identical clear-core registered hi-con (5369) prints were bi-packed in the stand's aerial image projector (for pin-hole control) and the testing began. Stepping motors were attached to the north/south and east/west controls of the aerial image lens board, and patched into the computer control unit. At this point testing began, not just for a traditional streak, but also for a "glowing" ring which would animate up and down the streak. Joel Hynek developed a cam following device, operated by the peg bars on the stand, which would smoothly open and close the light valve on the aerial image projector. In conjunction with diffusion filters on the projector, this device gave us animated glows produced simultaneously with the streak exposure.

A ceiling of "raining" stars became the graphic representation of Zeus, complementing the perspective of the floor. A force field of whirling light rings was the device used by Zeus to restrict Sonny's movements. A multicolored north/south streak was done from rotoscoped art to illustrate a force holding onto Sonny's

roller skates.

Finally, little touches like lightning flashes were added to finish the scene.

One of the problems with so many elements in a scene simultaneously is that each pass made on the optical bench with IP (5243 interpositive) slightly fogs the scene. And a burn-in from hi-con or even a registered print loses the subtle detail of glows or stars. So a technique was devised whereby a normal IP was bi-packed with a 2-stops thin registered print (5381) so that the IP took care of the detail, while the print took care of maintaining the black background.

Joel Hynek, while working on the wall sequence, was concerned about the fog level being caused by the slow effect, so at the end of one of the close-up wall-girl opticals we exposed the girls slowly over black to see exactly how much fog level the glow was causing. The result was a very interesting two-toned glowing outline of the girl's head and shoulders. Everybody who saw it said that we should try to use just the glow effect alone somehow. Well, nothing came along until it was decided to put in a shot of Mr. and Mrs. Zeus in heaven. How to do it? A glow outline in space, of course!

Consequently, a blue-screen shot was set-up of Mr. and Mrs. Zeus where they are seated in chairs while suspended in space. Now, a conversation between Kira (Olivia Newton-John) and Zeus and his wife could be made incorporating our

new effect.

R/Greenberg Associates had approximately six months production time to test and shoot the one-hundred-twenty-three optical effects. The company currently employs approximately twenty people with Richard Greenberg as Creative Director, Robert Greenberg as Producer, Ken Stytzer as Director of Animation and Joel Hynek as the Optical Director. In addition the studio has its own designers, optical technicians, editors and production staff.

The company operates out of 11,000 square feet, which includes art department, animation department, insert stage, optical department and editorial. It has currently added the only DC (direct current) computerized optical effects step printer (all other motorized or computerized benches use stepping motors for motion control).

The Greenberg studio is currently working on a number of other feature and commercial projects which involve live-action, animation, opticals and special effects.

A second project is also being developed with XANADU producer Joel Silver utilizing the Greenberg specialized techniques. Keeping in mind the benefits of working with special effects material during the earliest production stages, Mr. Silver intends to go one step further on his next endeavor. This would involve the Greenberg studio during initial script development.

THE STEADICAM AND "THE SHINING" Continued from Page 789

other reasons, I could see a gradual improvement in my operating with each playback. I learned the route like a dancer learns a difficult piece of choreography and I could relegate more and more of the navigating to my subconscious and attend to the rhythm of the shot. To be fair, Kubrick later admitted that in selecting takes he went for performance every time and that many were technically indistinguishable. (He has been known to mutter, upon sitting through twenty identical passes in the lunchtime screenings, "Damn cross-hairs, they get me every time!")

THE "TWO-HANDED" TECHNIQUE

Throughout the production I worked on what we now call the "two-handed technique". I found that if one hand strongly holds the Steadicam arm and is used to control its position *and its height*, the other hand is able to pan and tilt the handle with almost no unintentional motion in the shot. Whereas before the act of booming up or down would always seem to degrade slightly the steadiness of the image, now one can maintain the camera at any boom height and yet not influence the pan or tilt axis at all. This understanding has been the key to holding the beginning or end position of a shot so still that one must examine the frame line carefully in order to find any "float" at all. Kubrick was often able to use the head or tail of a Steadicam shot as his master for at least a portion of a dialogue scene.

Kubrick controls every aspect of his production, including the musical score. Here Shelley Duvall looks on as he works with it.



Even if I got caught in an awkward position because of an unexpectedly quick stop in the action Kubrick would count the beads of sweat, cast a practiced eye on the twitching of a calf muscle and wait until he judged that discs were about to fly like frisbees before he would quietly call "cut".

THE 35BL

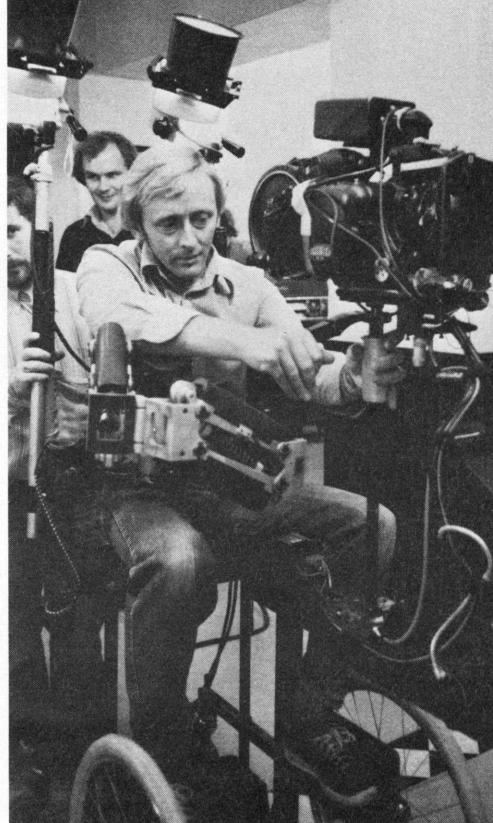
In the beginning I was somewhat apprehensive about shooting an entire picture with the 35BL on the Steadicam, not to mention that it was for Kubrick. It did not prove to be as difficult as expected. My style of operating is fairly relaxed anyway, and with the chance to put the camera down and watch a replay on each take, one could continue indefinitely or until the next tea and bacon-roll arrived. Unfortunately there was a new MacDonalds nearby, so the evening break went through that phase, much to the disgust of the English crew. (The BL does become somewhat more burdensome with a full cargo of Big Mac's on board.)

One advantage of the 35BL is its mass. It's about 10 pounds heavier than the Arri IIC, but it allows a noticeably quieter frame. Also the BL is less affected by gusts of wind. All in all, I came to prefer it to the Arri IIC for general shooting.

CLOSE QUARTERS

From the beginning, Kubrick intended to shoot within some of the more constricted sets without flying out walls as often as usual. Since he wished to use wide lenses, in particular the Cooke 18mm, he used the capability of the Steadicam to rapidly boom up and down to avoid distorting the sets. As someone approached and passed the camera we held the proper head-room by changing the height of the lens rather than tilting and risking the keystoning of the verticals on the set. Throughout the shooting I kept an additional spirit level mounted fore-and-aft on the Steadicam so that I could keep an eye on the tilt axis.

The Steadicam can reverse its direction rapidly and without any visible bump in the shot so one can back into a doorway or alcove and push out again as the actors pass by camera. In addition, since there are no geared-head handles in the way and no need for an operator's eye on the viewfinder, one can pass the camera within an inch of walls or door frames. The combination makes a formidable tool for shooting in tight location spaces. Of course, John Alcott was left with the lighting problems that result from this kind of freedom. However, I never heard him complain and he always managed to solve these difficulties in his usual imper-

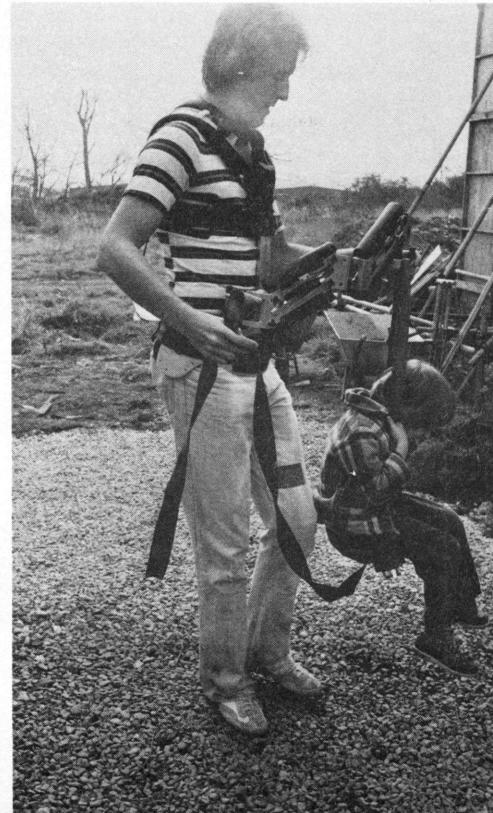


Ray Andrew demonstrates the two-handed technique. An English Steadicam operator, he filled in when Brown went on leave to shoot *ROCKY II*.

turbulent way. John personally flew in flags and dealt with some of the camera shadow problems that arise when you are seeing 360 degrees around a room.

In the Torrance apartment in Boulder, I had a shot bringing Wendy and the doctor back along the corridor from the bedroom, backing around in a curve, booming up, then way down as they sat on the sofa, finally holding still for 1/2 page of

Danny Lloyd who coincidentally weighs as much as an Arriflex 35BL camera, goes for a ride on the Steadicam. He was delighted with his new "swing".



dialogue. There is nothing about this shot that would attract the undue attention of the audience, however the lens is just where Stanley wanted it throughout. This is exactly the kind of shooting that I am most interested in. I have an increasing reluctance to suggest to a director that I might be able to smoothly jump out of the window and land shooting. It may be a sign of getting older, or perhaps it just represents the maturing of my taste for the moving camera!

In the Kitchen set, one of the best shots for the Steadicam in the picture involved backing up ahead of Scatman Crothers (Halloran, the chef), Shelley Duvall (Wendy) and Danny Lloyd (Danny) as the three take a winding path through rows of immense restaurant machines and huge stoves and racks of dishware. Even if there had been room to wheel a dolly along this path, the camera would have been required to stay more or less centered, which would have meant some very sudden pans as the camera's axis swung around corners. In my case I took the least disturbing "line", like a race driver going through turns, and so the result has an unearthly tranquility about it which seems to best fit the requirements of that particular scene. In short, with the Steadicam, one can choose to pivot on any axis: far ahead of the lens, the nodal point of the lens, the filmplane, or some point far aft of the camera. In the case of this shot, I was able to pivot my camera around an imaginary point halfway between me and the actors, and prevent violent swings from side-to-side as we made the turns.

In Jack and Wendy's winter quarters in the Overlook, there were many spectacular opportunities for the Steadicam as the various players passed through the entrance hallway. For example, as we followed Wendy leaving the apartment, she would descend the three stairs just before the door and the camera would boom smoothly down in sync with her move. Then, as she passed through the door, I would boom up to negate the fact that I was now descending the same stairs, and then squeeze the matte box through the door just as it was closing. On several occasions I preceded Jack (Jack Nicholson) or Danny through the door and made the above maneuver in reverse. Obviously it is important that the camera doesn't make an unmotivated dip or rise just before or after the actor gets to the stairs. It feels better if the camera can be disembodied and not required to climb stairs itself! Other shots that stick in my mind: the-over-the-shoulder on Jack as he climbs the stairs above the lobby to find Halloran, the very believable moving P.O.V.'s as Jack or Danny enter room 237.



During night filming on the EMI backlot, Garrett Brown, with Steadicam, follows the fleeing Shelley Duvall and Danny Lloyd. *Brown in the Maze*, where all of the illumination for the night sequence came from outdoor floodlights mounted between the hedges. The simulated snow consisted of salt and pulverized Styrofoam in a layer about a foot deep, and it was most difficult to run through while carrying a Steadicam-mounted camera.



SPECIAL MOUNTS

One of the most talked-about shots in the picture is the eerie tracking sequence which follows Danny as he pedals at high speed through corridor after corridor on his plastic "Big Wheel". The sound track explodes with noise when the wheel is on wooden flooring and is abruptly silent as it crosses over carpet. We needed to have the lens just a few inches from the floor and to travel rapidly just behind or ahead of the bike.

I tried it on foot and found that I was too winded after an entire three-minute take

to even describe what sort of last rites I would prefer. Also, at those speeds I couldn't get the lens much lower than about 18 inches from the floor. We decided to mount the Steadicam arm on the Ron Ford wheelchair prototype that Stanley helped design years before and still had on hand.

This is a very useful gadget. It can be properly steered in either direction with a simple set-up change, and the seat can be mounted low or high depending on the requirements of the shot. We arranged it *Continued on Page 850*

UNDERWATER CINEMATOGRAPHY FOR "THE BLUE LAGOON"

Filming under the clear ocean waters of the Fiji Islands with a cast of young actors who had never dived before produced beautiful scenes

The stunning underwater sequences that go so far toward making Columbia Pictures' *THE BLUE LAGOON* a feast for the eyes were directed and photographed by the famed Australian man and wife team of underwater filmmakers, Ron and Valerie Taylor, with an expertise gained from their work on such film classics as *BLUE WATER*, *WHITE DEATH*, *ORCA* and *JAWS*.

In the interview that follows, the Taylors discuss their work on *THE BLUE LAGOON*.

QUESTION: Can you tell me how you came to be selected to shoot the underwater footage for *THE BLUE LAGOON*?

RON TAYLOR: Richard Franklin and

Randall Kleiser came to my home to have a look at some of my stock footage. I had about 10,000 or 12,000 feet of 35mm footage. They selected a couple of things and liked my work, so they asked if I would consider doing the underwater shooting on the picture. They sent me a script and it looked like a good job, so Valerie and I were only too happy to go to Fiji and start working on it. When we got to the location in Fiji, it looked like we had nice, clean water that we could work in. So we scouted around for places to find coral formations and schools of fish. We found them, but then we had to fit in with the first and second units, which were usually working with the two younger kids, Glenn Kohan and Elva Josephson, or the two older ones, Chris Atkins and Brooke Shields. We

had to work as third unit and just grab whoever was available at the time. We'd study the script and find out which scenes we could shoot. The problem was that sometimes we could only have the kids for a few hours, but on other occasions we could have them for a whole day. So it took a bit of juggling to work out where we would go and who we could take and how long we could have them for.

VALERIE TAYLOR: We had other problems, because in one place where we worked the water wasn't clear enough. So we had to work away from the main island, which meant traveling in a boat and taking a lunch. The kids liked it because it was a picnic or an adventure for them. When I first arrived



(ABOVE) The famed Australian man-and-wife team of underwater filmmakers, Ron and Valerie Taylor, were assigned to direct and photograph the stunning underwater sequences for Columbia Pictures' *THE BLUE LAGOON*. Photograph by Geri Murphy. (RIGHT) The teenage stars of *THE BLUE LAGOON*, Christopher Atkins and Brooke Shields, swim over beautiful coral formations. (BELOW) Ron Taylor shoots scenes of Chris Atkins finding pearl shells and extracting the pearls underwater.



on Turtle Island I said to Ron, "We'd better get these children good masks, snorkels and fins, so that they can swim around over the corals and in the ocean and realize that nothing down there is going to hurt them." We were very fortunate, because the best brand of snorkeling equipment for children—made in Italy—was available in Fiji. They took to it straightaway and we just let them play around for a while. Then, when we wanted them to perform a scene, Ron would say what he wanted and they would swim through the action and do their scene with the masks, snorkels and fins on. I had taught them how to hyperventilate (which is deep breathing), so that they could stay under the water for a long time. They'd do it several times and if Ron wanted an alteration in their action, he would come up and say, "Now, go to this side of the coral or that side." Then they'd practice and take big breaths and do the scene without their equipment. They were terrific, even when they were cold.

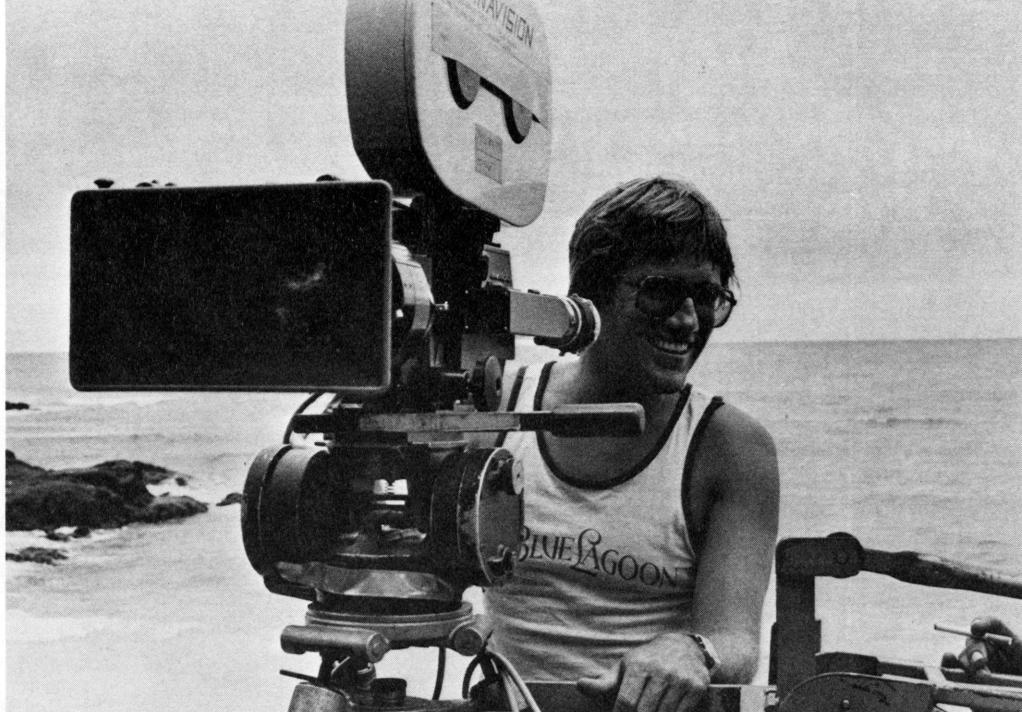
RON: They were diving without any equipment and with their bare eyes they couldn't see very clearly underwater. So there was a little bit of a worry that they might bump into the coral and cut themselves, which they did once.

VALERIE: Ron and I were the third unit and that was it—just Ron and I. Occasionally we had a young man named Ian Snodgrass to help us, but mostly we had to help everybody else, so we'd go out by ourselves with a couple of Fijian lads to look after the boat and we'd work.

QUESTION: How far from your shooting area was the place where you were staying?

VALERIE: We were staying on a boat that they used as a sort of hotel. The water there wasn't as clear as we needed for underwater photography, so we had to go five miles away to work every day. Then we'd bring everybody back in our little boat in the evening. Randal was marvelous. He said to Ron, "Here's the shots we need. I'm going to leave it to you because this is your field, not mine." Once he saw the rushes he just left us alone completely. Anything we asked for they endeavored to get and supply us with. Then we just went out and did the best we could.

QUESTION: I know that the two of you always function as a team, but, how did



Randal Kleiser, producer/director of *THE BLUE LAGOON*, on location in Fiji. Kleiser, who previously scored with his direction of *GREASE*, had sufficient faith in Ron and Valerie Taylor to give them free rein in the filming of the underwater sequences. His faith was borne out by the magnificent scenes that resulted from their work.

*you actually divide up the work on *THE BLUE LAGOON*?*

RON: I had to concentrate on the camera angles and the photography, while Valerie got the kids into position to dive in the correct places for my camera. They were working hundreds of yards away from the islands and yet they performed remarkably well. They didn't appear to be frightened. I've had other less fortunate experiences with talent who claim that they are underwater people, and when you get them in the water they've got excuses why they can't do this and can't do that. But these kids were the best I've ever worked with.

QUESTION: What would you say was some of the trickiest action to film?

RON: In the script Chris had to find some pearls underwater and it's not easy to find pearls with diving equipment on; without the equipment it's really difficult. So he practiced. We'd place the pearl shells in special places and partly cover them. We pushed pearls in and the shells closed up again on the bottom. Chris would have to come down and find them—this was all holding his breath without a mask—then open them up, reach in with his fingers, find the pearl and roll it around on-camera and then swim off. That took a lot of doing.

QUESTION: Were you always actually in the ocean or did you shoot some of the scenes in a pool or tank?

RON: We were in the ocean. We had some fairly good weather conditions but some murky water. We had to search around for some clear water, but we found it and the weather conditions were okay, so we were able to get our shots rather quickly. The visibility in some cases was up to 100 feet and the minimum was about 50 feet. We nearly always used wide-angle lenses, and that helped the visibility, of course. Get in close with a wide-angle lens; that's really the secret of underwater photography. If you get back farther with a normal or telephoto lens, you just compact all that sediment and it gets very foggy.

QUESTION: The underwater world is rather disorienting, especially for people who are new to it. How did you get the kids to stay in the areas where you wanted them?

VALERIE: We always tried to have a piece of colored coral or something they could see without a face mask—something that was a different color—to guide them. On occasions I'd put a piece of colored coral in the right place.

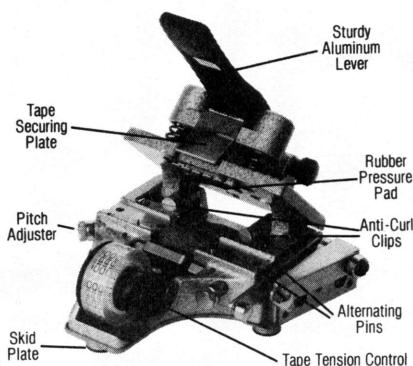
QUESTION: Ron, can you tell me a bit about the camera equipment you were using?

RON: I only used one camera. It was an Eclair Camaflex with a 400-foot load. It's a camera I got back in 1967 when I worked with a Belgian scientific ex-Continued on Page 833

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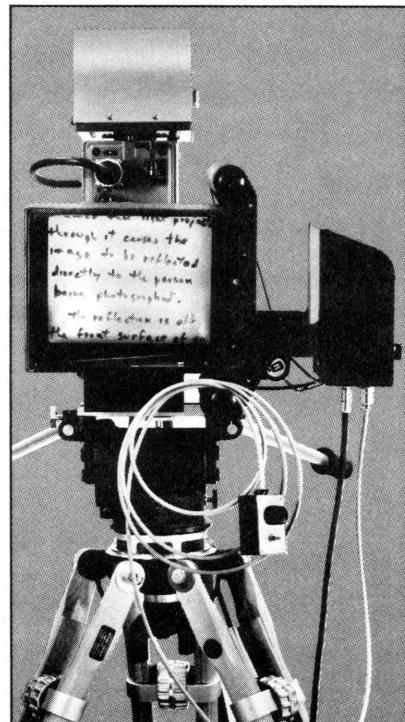
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ROGER CORMAN

Continued from Page 795

TLE BEYOND THE STARS will be close to \$5 million, so we have become a little bit more cautious in those areas. As a matter of fact, speaking of BATTLE BEYOND THE STARS, we chose Jimmy Murakami as the director. He had never directed a feature film before, but was an Academy Award-winning animator and had worked for me as a second unit director and an art director in Ireland a number of years earlier and had been shooting some commercials in Europe. I chose Jimmy as the director of this film for a totally unrelated reason. We knew we were going to be shooting live action that would have to cut into special effects shots that might be shot six months later and, while I much appreciate the type of director who comes onto the set and becomes inspired and says, "I believe the camera should go there" (after an hour or so of deliberation) however, for the particular film I wanted a director who could storyboard the entire film, who could take a closeup of a pilot in a space ship with the camera right in front of him and, at a particular moment, that pilot looks in that direction to match a shot that will be filmed maybe 90 days later of another space-ship coming by. So Jimmy's qualities as an animator and as a director of TV commercials working off of storyboards became very important for that type of work.

As to some of the more intangible attributes of a director, intelligence, I think, is important above all. I have never met in my life a successful director who was not intelligent. Beyond that there is this intangible spark, the creativity, the mark of the poet to go with the intelligence and again, as I say, the dedication to film and the ability to work very hard, because directing pictures is physically very hard work. I think people sometimes forget that.

Speaking now of producers, I might mention that a lot of people are producer-directors, like Coppola, Bogdanovich, and so forth. I might also mention my wife, who has had the most successful production career of anybody I know. She's produced eight films and has had eight consecutive successes. I've had a couple of failures; everybody I know has had a couple of failures, but my wife is truly the only producer I've ever met who never had a failure. She may well support the family if BATTLE BEYOND THE STARS doesn't do it this summer.

The attributes of the producer, I think, are very, very close to those of the director: The same intelligence, the same ability to work very hard. There are

some theories today on right and left brain in which the left brain is possibly a fraction more poetic. The right hemisphere of the brain, if I have these correct, is more logical. I would say the function of the producer and the director are almost the same, or the attributes are almost the same, except that I would say that while the director might lean a little more to the left brain, I would look for a little bit more logic on the part of the producer I was going to hire.

On the other hand, the producer doesn't generally get hired and you can underestimate what the producer does if you see what he is doing on the set, because if he's really done his job he doesn't do much on the set. His work is primarily accomplished before the picture goes into production. Most films start with an idea of a producer and then the decision is made to make that idea into a film. Now, that's the most important decision that will ever be made on the film. So the producer, who must then carry forward on a logical basis, at that moment is functioning on a creative basis, as well. As I say, putting all of this together you find, in general, that you are dealing with intelligent people who have learned the requisite technical skills, who are dedicated to the film medium and who are then willing to work very, very hard. Beyond that I don't know. There is a certain personal feeling I get talking with people and that conversation, or series of conversations, is extremely important because it determines whether or not I think I can work well with them. Somebody might very well be successful with another producer or some other company but might not work well with me because of my own personal ways of functioning and because of the budget limitations of New World. Now this is possibly not as specific as some of you might like it to be, but it's not a specific thing. It's kind of an informed guess—to talk to somebody and say, "Yes, I think you can do this job." That's particularly true when you are dealing with new people who have never done the job before.

Any questions?

QUESTION: How much involvement do you permit a writer who works on one of your pictures?

CORMAN: When I work with a writer who is not a director, we try to keep the writer involved as much as possible. There are several recognized stages in the development of a screenplay, according to Writers Guild rules. There's the treatment, the first draft, the second

draft and the polish—and possibly more, but we try to hold it to that level. What I do as a producer is work with the writer through the treatment and the first draft. Then I bring the director in as part of a joint effort that involves the writer, producer and director. This occurs at the time of the second draft or, at the latest, during the polishing stage, depending upon how well it is going. The director comes in so that he can contribute to the writing process. Then we have a certain amount of rehearsal and if the writer is available we like to have the writer come to the rehearsal and come to the set as much as possible. Then we like to have the writer's opinion of the various cuts of the picture—partially for just his thoughts on the cutting, partially on the basis that we may be looping or changing some lines or, if we are in trouble, maybe reshooting or adding a scene or two. So we try to keep the writer involved as long as the writer is willing to be involved and most of the writers we've worked with want to stay with the film.

QUESTION: What advice can you offer someone who wants to work in the film industry—preferably as a director?

CORMAN: My recommendation for someone who wants to work in the movie industry as a director is that, before coming to Hollywood, you would do best to get some directing experience. The most readily available opportunities for that experience today are in the film schools. Almost every major university has a film school. There are a million different routes, of course, and just as I am saying this there is probably somebody getting off a bus right now in Hollywood who has never done a thing and he's going to win a giant award next year. But from my own experience, I would say that it would be best to go to film school, or if you don't go to film school, to work in documentaries or commercials locally somewhere. You are more likely to get experience if you are from right here in Seattle, or in Minneapolis, if that's where you come from. In that way you build up a body of work. You build up a reel of film that you can show. Then, if you go to Hollywood—fine! But if you do, then my next statement would be to take whatever job is available. It is highly unlikely that you would be offered the job of director of a feature film today, or a TV series, or probably even a commercial, unless you had come with a record of having made commercials for a Hollywood commercial house or a New York commercial house.

Continued on Page 837

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pedition. Part of my pay was that Camaflex. I like its design features and it can shoot 16mm, 35mm or Techniscope. My hobby is making things, so I built myself an underwater housing for it. I had used the housing that Eclair makes, but it is very heavy and I found it wasn't suitable for the way I like to work. So I made a very small, compact housing for it and got myself a range of lenses from 9.5mm on up to 55mm. On THE BLUE LAGOON I used mostly the 18mm or 28mm lens. The 9.5mm is really only for special effects. I have a dome port on the front which gives the full angle—118 degrees, but underwater it is remarkably good. It doesn't distort so much, because you don't have verticals; you don't have geometric lines. Traveling shots underwater come out looking especially well.

QUESTION: *The Camaflex, I would say, judging from its configuration, would not normally be thought of as an ideal underwater camera, but obviously it's your choice. Can you tell me why you like it?*

RON: It's true that the normal above-water magazine makes the camera awkward for an underwater housing, but Eclair makes a magazine especially for their own underwater housing and that's what I use. The other option, of course, would be an Arriflex and up to that time I hadn't seen a good underwater housing for an Arriflex—mainly because of the viewing system. Eclair also makes an eyepiece for their own underwater housing and the fact that you've got a face mask on enables you to see the whole screen magnified very easily and very well. I haven't seen that on an Arriflex housing. I worked with Peter Gimbel on BLUE WATER, WHITE DEATH and we used Arris with extended finders and it just didn't work. The image was so small in the reflex finder that we had to use external optical viewfinders. My Eclair is absolutely ideal. I've shot countless thousands of 16mm and quite a few thousand feet of 35mm on it. I even shot the real live shark sequences for JAWS with it, using the Techniscope configuration. Of course, they blew that up and intercut it with the Panavision footage. The same with DeLaurentiis' ORCA. I shot the live shark sequence for that with my Camaflex and they intercut it with the Panavision. Underwater you can get away with it, but I'm sure you

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wouldn't get away with it topside.

QUESTION: Did you use a zoom lens at all?

RON: No. We were using only prime lenses, which were ultra-sharp, and the center of them is the best portion of the lens anyway. The new 5247 film seems to be such a fine stock that it stands blowing up from Techniscope. I have four 35mm underwater housings. Two are for Eyemos and one of them is a Techniscope Eyemo. Then I've got two Camaflexes and housings. The Eyemos are very handy when working with sharks or any fast-moving creature, because the big housings are harder to swim fast with. The Eyemo is also good in the surf or a river or a waterfall, because it's easy to handle in turbulence. It's not going to get knocked out of your hands.

QUESTION: Did you use any lights underwater?

VALERIE: We used no lighting at all, because Ron wanted it to look totally natural. He felt that any form of lighting would immediately give an artificial look to the whole thing. That's why it's all natural light. Another interesting thing is that Ron did most of the underwater shooting without the aid of breathing apparatus. He did it holding his breath.

QUESTION: Was that because it was cumbersome to wear the gear?

RON: Well, I felt that if the talent was diving holding their breaths, I could do the same thing. It meant that I had to hold my breath longer, because I had to go down first, get myself in position and shoot up. Since I wasn't wearing a regulator, I had no problem with bubbles coming up through my picture when shooting upward. I found that I could hold my breath well enough, go down, get into position and do the shot. I just simply found it easier to do without SCUBA. We did have SCUBA available, but I've done nearly 30 years of diving, and in that period of time, I've learned to hold my breath up to two minutes underwater, if necessary. But during BLUE LA-
GOON I didn't have to hold it more than a half or three-quarters of a minute. I don't think any of the scenes ran longer than that.

QUESTION: What would you say was the average depth at which you worked?

RON: We only worked in very shallow

water. I went down as far as 30 feet a few times, but most of what we did was in about 20 feet of water. We wanted to be near the surface because that is where the fish life is. All the tiny fishes and the bright colorful corals are up in the shallow water. Also, you get much better light. You get the sunlight filtering, streaming through the water; whereas, in deep water the light becomes very dull and goes very blue. We found that the script called for shallow water anyway, so it worked out fine.

QUESTION: Where did you shoot the shark sequence?

RON: That was shot in Australia—with an Eyemo. We've had a lot of experience with sharks. We know where to go to find them and how to bring them in close to our cameras, so it wasn't difficult to do the job. We just have to be a little bit careful sometimes, because we lure them by chumming, by getting them into a feeding pattern. They get excited and rush around bumping sometimes. I've been bumped around by sharks but luckily I haven't had any serious bites. We've filmed sharks doing all sorts of things. We're sharky people. We go to a lot of trouble to get good shark shots, but then they end up using only a few seconds.

QUESTION: Did you get to see any of your footage for *THE BLUE LAGOON* while in Fiji?

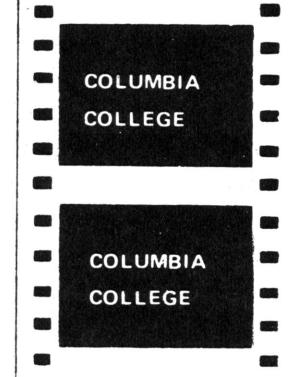
RON: Yes, the negative was processed in Sydney and in Fiji they had a screen set up under the palm trees where we could watch our rushes every night.

QUESTION: Now that the picture is in release, how do you remember your experience in working on *THE BLUE LAGOON*?

VALERIE: It was a terrific film to work on. Everybody was very nice and quite happy. The conditions were excellent and there was nobody pushing us at all. They seemed so happy with our work. People like Nestor Almendros, the first unit Director of Photography, would tell Ron, "I like your footage. It's very good. It's beautiful!" That made Ron and me very happy. ■

CORRECTION

We regret that in the July, 1980 issue of *American Cinematographer*, in the photograph appearing on Page 704, the gentleman shown with Director Alan J. Levi was incorrectly identified as camera operator Bill Gereghty. He is actually Director of Photography John McPherson, ASC.



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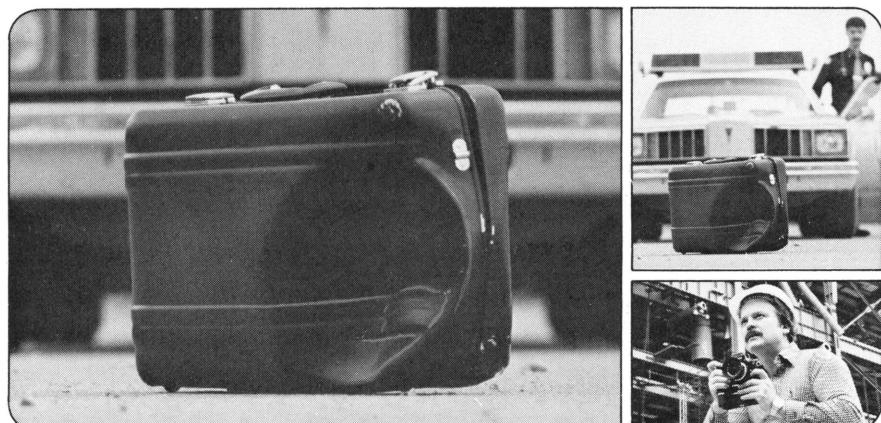
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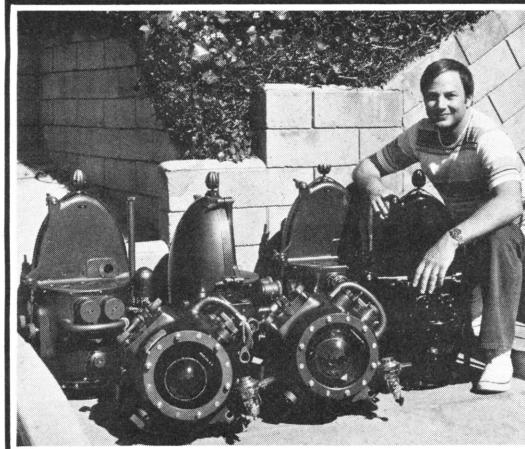
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MOTION PICTURE SEMINAR

Continued from Page 814

Academy Award-winning cinematographer Vilmos Zsigmond, ASC. On the program it states that he will speak on the subject: THE ABILITY OF THE CAMERAMAN TO CREATE REALISTIC EFFECTS OR ANY OTHER DESIRED MOOD ON DEMAND, but Vilmos, with characteristic casualness, talks off-the-cuff about his own experiences in meeting photographic challenges and the techniques he has employed on such films as CLOSE ENCOUNTERS OF THE THIRD KIND, THE DEER HUNTER, THE ROSE and the upcoming HEAVEN'S GATE. As usual, he holds the audience spellbound.

But he is not alone in that respect, for the final speaker of the Seminar is his colleague, Director Michael Cimino, winner of the "Best Direction" Academy Award for THE DEER HUNTER and also the director of the soon-to-be-released HEAVEN'S GATE. Michael, another good friend, speaks first about the filming of his two most recent features. Then I prime the questions—and-answers pump by asking him a few key technical questions, after which the audience bombards him with *their* questions.

It is a great way for a great seminar to close in a blaze of glory.

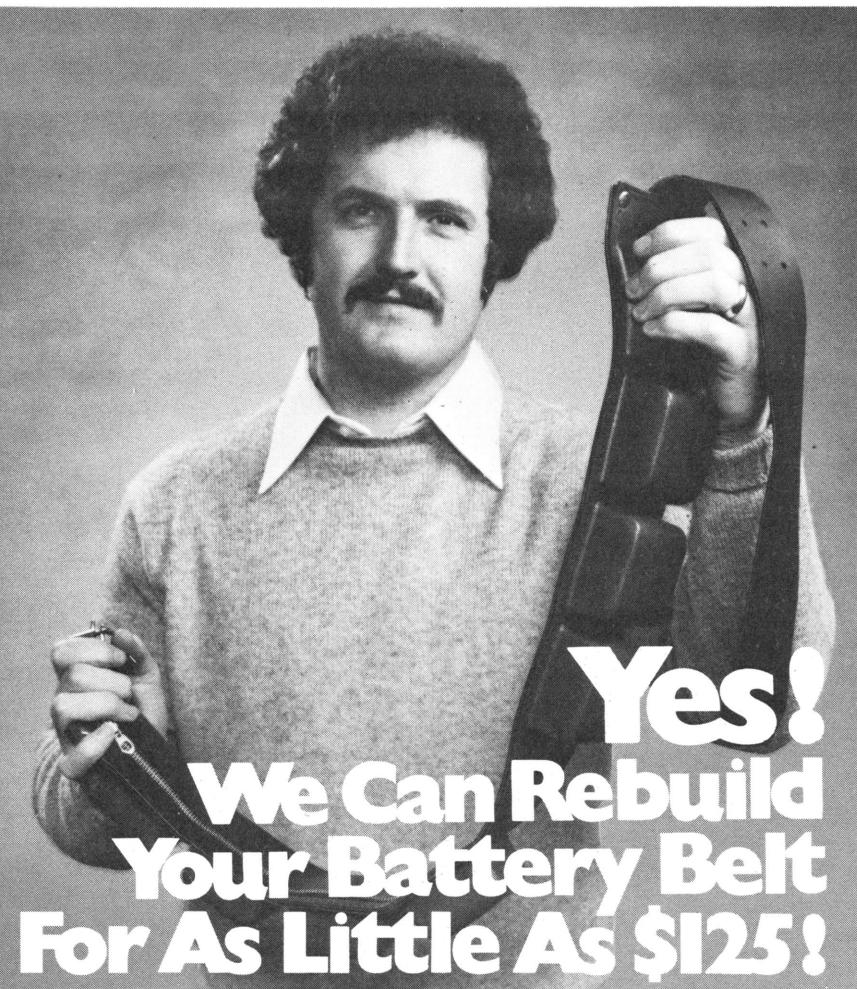
That evening the film program includes a screening of Paul Verhoeven's feature, SPETTERS, a short film from the USC Cinema Department entitled MORRIS, and a screening of Roger Corman's classic biker epic, THE WILD ANGELS.

Leaving Seattle (reluctantly), it occurs to me that out of all these Seminars that I have attended, Lucky Thirteen is the best yet in terms of content, speakers and the variety of pertinent topics covered.

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ROGER CORMAN
Continued from Page 837

The main thing, I really think, is to get on the inside. I came out of Stanford with some honors and one thing and another. The only job I could get was as a messenger at Fox and I took it. I wanted to get inside the studio and I think that's the first thing, to get inside the filmmaking process on whatever basis, so that you can learn and so that you can also meet people. One of our brightest young guys I advised to go to work as a grip on a picture. He did very well working as a grip on this film and was hired by the key grip on his next picture, so he's working around now. He'll spend about three or four months working as a grip and I've told him I will probably give him a shot as a second assistant director in the fall. Now, when he comes to be a second assistant director he will have invaluable experience, having worked as a grip. It's easy for me to say, as I get a little older, "You guys got to start at the bottom." But it is true. I think there are too many people at the top, whether they are writers, directors or producers, who have not put in that work in the technical area. Francis Coppola started for me as an assistant editor and as a soundman. A number of others have started as grips and as editors. Several of our best young directors have started as editors.

QUESTION: How deeply involved is your company in TV production?

CORMAN: We have not been particularly a TV oriented company at all. We are doing a movie-of-the-week called *THE GEORGIA PEACHES*, which is actually a remake of a film we made as a feature and which we are doing for CBS. It's our first movie-of-the-week, as such. I have no track record in that area at all. All I can say is that our relationships with CBS have been very good. The only constraining factor is that they require a certain number of approvals and, having been the head of my own company for the last ten years and not having had to confer with anybody, it is a change of thought for me, but the experience so far has been good.

QUESTION: Considering the subject matter of some of the low, low budget, strictly commercial pictures you made when you were starting out, wasn't there a tendency on your part to not take them very seriously, to just dash them off?

CORMAN: No. There were directors I knew when I was starting who would

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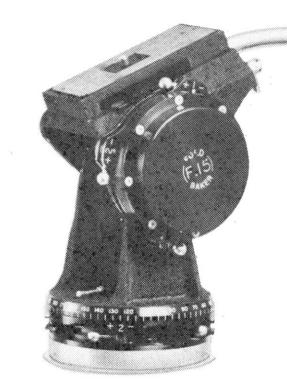
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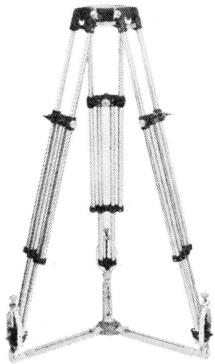
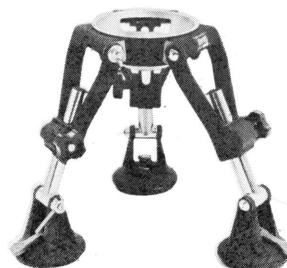
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take a commercially oriented film and say, "Well, it's just a cheap film. I'm going to knock it off." But most of those guys are not in the business anymore; they're not even directors anymore. Irvin Kershner started in the business with me and worked very, very hard—and he recently directed *THE EMPIRE STRIKES BACK*. At that time, my policy as a working young director was: "I will take almost any assignment offered to me, unless I can see that it is just hopeless." But if there was any spark, anything in the film whatsoever that I thought I could make interesting to myself or to an audience, I took the assignment. I then did my best to make that film, within the limits of budget and schedule, as well as I possibly could. If I could say anything to young directors, the most important thing would be: "Take every frame of film you shoot seriously and do the absolute best job you can. The minute you start talking down to your project, at that point you will have ceased being a director. Figuratively and literally you will not be a director much longer."

QUESTION: How often do you fire a Director of Photography?

CORMAN: I don't. I'm sure somebody will be able to dig up an instance when I did, but I don't remember ever firing a Director of Photography, although I've come close a couple of times. I may have blocked one out, but to the best of my knowledge, I don't think I ever did. I choose the Director of Photography—and I touched on this a bit earlier—by looking at his previous work, by talking to the cameraman himself and by talking to the producers and directors (and very often the gaffers and grips) with whom he has worked in the past. In this way I can see an example of the quality of his work and learn something about the way in which he works. For instance, there are a lot of cameramen who can photograph very rapidly, which is essential for us in low budget work. However, their quality is not good. There is a slightly larger group of cameramen who can photograph very well, but will take all day to light the set. We are looking for the man who can do good work quickly—and that man is hard to find.

QUESTION: Does your company finance its own film production?

CORMAN: A limited amount of financing is easy for us. We've had ten years of a fair amount of success, so we've built up what our accountants refer to as retained earnings. We do plow our retained earnings back. We reinvest our profits. How-

ever, we are finding that the low budget films that we have been successful with three, four, five years ago are increasingly difficult to sell today, so we are moving into more expensive films and for those we must obtain some form of outside financing to go with our own. We are still financing our lower budget films entirely in-house. Our bigger films involve increasingly some sort of pre-sale or co-production where we might sell out the foreign rights or sell out the TV rights. Today pay TV has become a very good market for us.

QUESTION: Do you think the motion picture industry will weather the current recession in good shape?

CORMAN: *I think it will. There is a saying that motion pictures are depression-proof, and that has been true to a certain extent, especially during the '30s when movies boomed in a full depression. More recently I've seen a series of graphs which indicate that movies dip a little bit in a recessionary period, but not as much as other aspects of the economy. Certainly not as much as automobiles at this time. So you'll see probably during the current recession a slight drop in the graphs, but the drop in the graphs for motion pictures will not be as heavy as for the economy in general. That will be harmful to the independent producer or director, although I'm sure there will be money available for good projects, as there always is.*

QUESTION: In the past few years women have become much more visible and important in the motion picture industry. Do you think that trend will continue?

CORMAN: *The reason I smile is that I have a story to illustrate that point. I certainly believe that women have been becoming more active in motion pictures and that the parts for actresses are becoming more important. You are seeing more women writers, directors and producers. You are actually seeing more women on the crews. We find—and I didn't initiate this, but since I've hired so many women in positions of authority it may be filtering down the line—that we are seeing more women grips, women electricians, women assistant cameramen and, specifically women editors. We built a studio recently and I changed the design—on the basis of having looked at our crews—to include a bigger women's room. It's happening, folks, so we thought we'd better allow for this in building the studio.*

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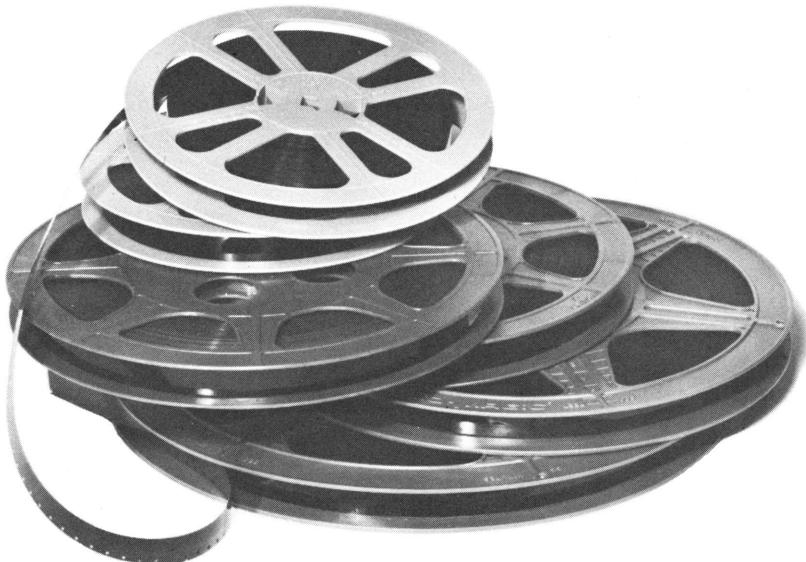
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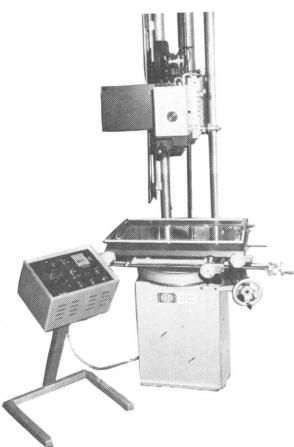
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BEHIND THE CAMERA ON "THE SHINING"
Continued from Page 785

QUESTION: What variations did you make in the color temperature of the light to enhance various moods of the film?

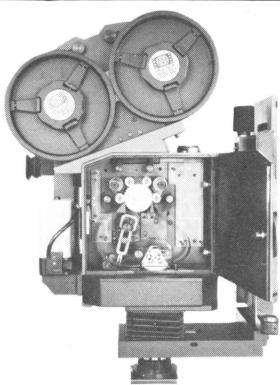
ALCOTT: In the beginning of the film I used just the ordinary straight daylight system. I'm referring now to the 860 bulbs shining through the backing outside the windows. When the Torrances first arrived and checked into the hotel, the whole thing was lit that way, without any color filter whatsoever. Then, when it started to snow, I changed the whole lighting system to a full blue. I put a full blue on all the windows, and by that I mean that the gels were actually sandwiched in between two pieces of glass. So I had a double pane put on all the windows and that's why it wasn't just a simple thing to make the change. It took the construction people at least a day to change all those windows in that large lounge (and also in the lobby) to a full blue, but it created a cold daylight effect for the snow sequences and gave me a much better contrast between the warm light of the chandeliers and the cold light coming through the windows.

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QUESTION: THE SHINING is shot very straight. In other words, the visual treatment is devoid of all of the usual mysterioso effects that are conventionally used in horror films. That being the case, is there any instance in which you shot what might be termed a "special effect" in the camera?

ALCOTT: There is a sequence looking down from the balcony with Jack at the typewriter and the fireplace in the shot. I wanted to get a full fire effect, a nice big glowing fire in the fireplace, but I didn't want to reduce the general lighting in any way because I needed the depth of field. So I shot the scene all the way through without the fire burning, then rewound the film, killed every light on the set, lit the fire, opened the lens up to T/1.4 and shot the fire by itself—which gave me a nice glowing fire. It was something I thought would be different to do and it was worth a try anyway. But I think that's really the only kind of "special effect" we did in the camera.

QUESTION: Did you use any type of video assist on the cameras while photographing THE SHINING?

ALCOTT: Both Arri 35BLs were fitted

with video cameras which enabled us to watch the scenes as played. This was especially valuable with the Steadicam, because everybody was virtually in the picture and the only way to view the scene was from outside in the corridor somewhere. Without the video set-up it would have been impossible to see what you had until you actually saw the rushes. I found also that the device which Garrett Brown has on the Steadicam for stop and focus control is great. I especially found the stop control to be extremely valuable in cases where it was an advantage to change the stop within the scene. I found that it was very good to be able to hold the control and be away from the camera, but watch the picture on the TV monitor. Most of the time it is very difficult to know what the camera is viewing when it is panning or tilting especially. You have some idea, of course, but with the TV monitor in front of you it's easy to judge to the finest degree of stop control. I just hope that perhaps in the future all camera manufacturers will bear this in mind and incorporate it into their designs.

QUESTION: Did you use any HMI lighting on this production?

ALCOTT: I think once, in Danny's bedroom for a moonlight effect, but that was the only time. In fact, I haven't used HMIs an awful lot until this picture that I am doing now (FORT APACHE), but I must say that I find them very good. I think one has to be careful as to which make of lamp one chooses and which company one rents them from, because they have to be in tip-top condition. They've got to be maintained to their fullest. They're not like an ordinary light that you can hire out and switch on and as long as it comes on it's alright, because it isn't with an HMI. There are contacts and various other things that must be absolutely perfect, because if they are not, that's when flicker can occur without being the fault of the frequency. In other words, it's not always the frequency that gives the problem; it's the connections and the bad maintenance of the lamps. But I always carry a frequency meter with me anyway, as a safeguarding factor. I think a frequency meter is one of the most valuable things one can have these days if you are going into HMIs, or even if you are going into fluorescent light for lighting, because in the northern part of England, for instance, you will often get a very weird type of voltage and you'll never get rid of the flicker.

QUESTION: From what you've told me, most of your actual photographic light came from the practicals built into the set. Would you say that you

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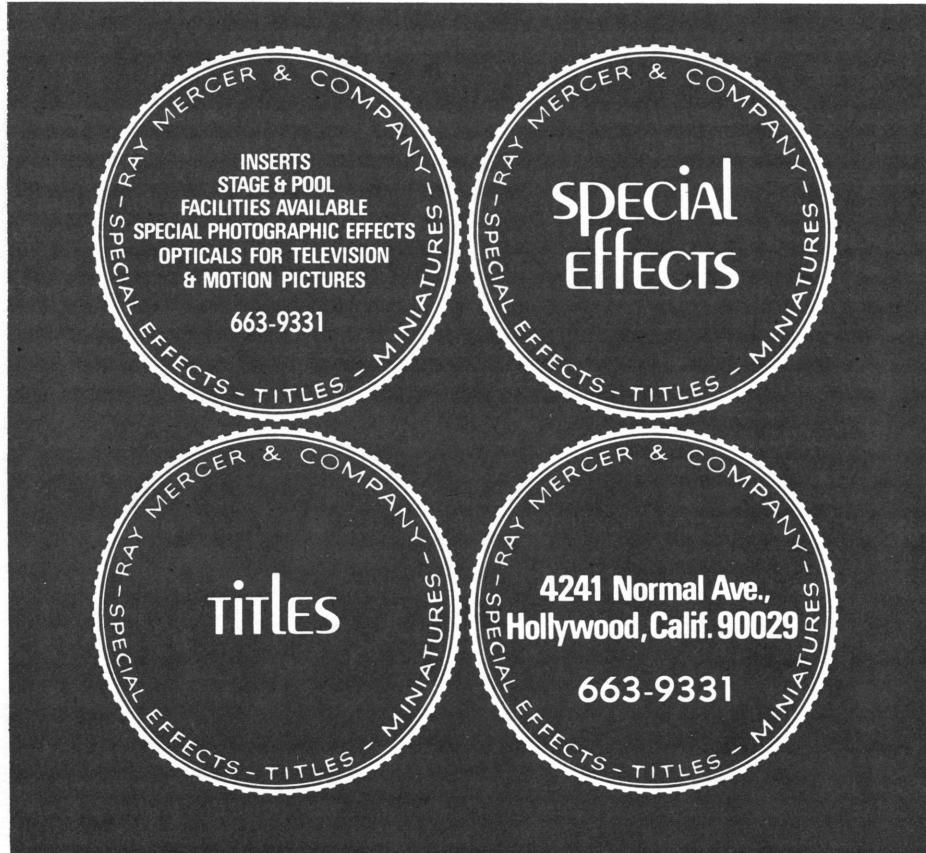


used that kind of light more on this film than on your other films?

ALCOTT: When it came to sticking with the actual lights that were built into the set, the chandeliers and other practicals, the answer is that I did use such lighting in this film more than in anything I've done before, but I had to do this for a very special reason—and that was the Steadicam. Because of the Steadicam there was no way I could have used any floor lights. I couldn't have any ceiling lights because the hotel lounges, if you noticed, are built in such a way that they are fixed; they are solid; they are there for keeps. The hotel was actually built wall-to-wall. As you went out of a hotel door you went into the studio corridor; it was that close. At any rate, in most instances, the lighting was what existed within the actual setting. I would use the chandeliers as my overhead lighting when they weren't in the picture. In other words, I would use them as a supplementary light for the practicals which appeared within the scene. I'm speaking now of the wall brackets and the small chandeliers in the outer rooms of the main lounge.

QUESTION: But as "real" as practical lighting is, we both know that, from the aesthetic standpoint, it's not always the best light with which to photograph a scene. That being the case, weren't there times when, to insure the quality of the image, you had to use extra units to supplement the existing practical lighting?

ALCOTT: In instances where I could use additional light—for instance, under the table when Jack is on the floor groveling after he's had his nightmare—I did use additional lights. But these would be basically Lowel umbrellas with Lowel-Lights inside them, and I would supplement that with a full blue in order to get the same daylight effect. The fact is that under the table there was no light, no matter what I put through the chandeliers. Sometimes I would have to boost the daylight in instances where I needed the extra depth, as well. So the answer is that yes, I did use supplemental light in quite a few instances, when it was called for. By "called for" I mean if it was not possible to use the light existing within the set itself. But whenever possible I did use the existing fixtures for supplemental lighting. For example, if Shelley was talking to Jack in the mid part of the lounge, I would use a wall bracket with tracing paper to soften the light falling onto her and I would bring it up to give the required amount of exposurable light. All of our lights were on dimmers using increments from 1 to



10. If my general level were 4, I might bring the supplemental light up to 6 and then put on a quarter-orange or half-orange to keep the color temperature consistent.

QUESTION: You mentioned before that in the ballroom set the chandeliers tended to pick up as reflections in the metallic gold walls. Did the metallic materials cause any other problems that you can recall?

ALCOTT: No, not really. In fact, it rather added to the whole effect. It reflected my light, which gave the set an overall golden quality. If I was fortunate enough, in the position the camera was in, to have the chandeliers on without any reflection, then I was fortunate enough to have the light of the chandelier bouncing off the mirrored surface, giving me an overall fill. The six troughs I mentioned—three on either side—gave me an overall top fill for basically the whole set. The practical small brackets around the ballroom I kept at a very low level because, being right next to the reflective material, they tended to burn out. I didn't use them as a lighting source at all and they were much more effective as viewing practicals. On the dimmer scale of 1 to 10, the setting for those wall brackets was about 3. Each table had its own separate table light—an ordinary 25-watt bulb—but it was just enough, with the white tablecloth, to lend a luminosity to the features of the people seated around the table. That sequence had a period look to it—which, of course, it was meant to have.

QUESTION: You said that you used a bit of smoke in there. Was that all it took? You didn't have to augment it with any fog filters?

ALCOTT: No, just the smoke—and it was very, very light indeed. In fact, I tended to put it just in the background. You get to the point with smoke that no matter what you do in the foreground, it just never shows. So that's why I used it on virtually just the background half of the set. The light from the troughs gave it an overall glow which softened it, as well. Then, of course, there was the hard light at the bar coming from the cabinets behind the bartender. The bar was sort of a set of its own within a large set, but the hardness of that light made the rest of it look much softer, more of an illusion. Had there been no bar there at all it would have been flat and uninteresting. It needed that contrast in the foreground to give it the depth that it had.

QUESTION: I gather from what you've told me that whenever you needed a

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cold look it was a matter of filtering tungsten with blue gels. Were there ever any times during the shooting when you lighted for daylight balance with arcs, using white carbons?

ALCOTT: No, there was no time that arcs were used to create a daylight effect. The only time I used arcs was in the sequence where Shelley is running through the hotel just before she exits. She runs through the corridor into the lobby when she finds all the skeletons. I shot that with open arcs to get the very hard shadows which I found effective. And one other time, in the sequence where Scatman is phoning from his apartment in Florida, I used an open arc with a full blue filter to create a hard blue light, but that was intended more for a night effect. The only other light was the red practical burning in the background, which gave it a kind of separation.

QUESTION: The long establishing shots of what was supposed to be the Overlook Hotel actually were scenes of a real hostelry [The Timberline Lodge, Mt. Hood National Forest, Oregon]. Did you have the benefit of seeing those shots from the actual location before you had to light the hotel exteriors built on the EMI backlot?

ALCOTT: Yes, plenty of time, and it was very helpful. I should like to comment on the wonderful sequence which Greg MacGillivray shot from the helicopter in the first sequence of the picture. It was a great introduction to the film and some of the most beautiful helicopter work I've ever seen.

QUESTION: In working with Stanley Kubrick on THE SHINING—which marked the fourth feature that you've done with him—did you adopt any different method or approach to working together, or was it basically the same working pattern that you've sort of established over the years?

ALCOTT: I think that, as time goes on, Stanley becomes more thorough, more exacting in his demands. I think that one has to go away after having done a film with him, gather knowledge, come back and try to put that knowledge together with his knowledge into another film. He is, as I've said before, very demanding. He demands perfection, but he will give you all the help you need if he thinks that whatever you want to do will accomplish the desired result. He will give you full power to do it—but, at the same time, it must work. Stanley is a great inspiration. He does inspire you. He's a director with a great visual eye.

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QUESTION: Did you have much opportunity to discuss with him the visual style he wanted for this particular vehicle?

ALCOTT: He said he wanted it to have a different approach from that of previous films. He stated that he wanted to use the Steadicam extensively and very freely without having any lighting equipment in the scenes. In other words, he suggested that we let the practical lighting work for us without using any actual studio lights. It wasn't easy. In fact, at first it was quite worrying, because while I had visions of how it could work, I wasn't sure it would actually come into practice. Even though you might prelight certain pieces of sets and lighting models, you can't tell what is actually going to happen when you get artists in position. This you can never visualize until you are given a set-up, which causes you to light it. By then the sets have been built and it's too late to change much.

QUESTION: How would you sum up the working rapport that has developed between you and Stanley Kubrick, having worked together on four features in succession?

ALCOTT: I feel that when you're with Stanley the working relationship benefits from picture to picture. We've worked together since about 1965 and in working with him there is always a different outlook, a different idea: "Let's try something different. Is there any way we can do it differently? Is there any way we can make it much better than it was before?" I feel that when you have as much time as I had on *THE SHINING* to make sure the sets are right and that the Art Director is building them to your lighting design, as well as his own design, it is a great privilege. You don't have that privilege with someone who lacks the experience and the visual perception that Stanley has. He is willing to bend over backwards to give you something you may desire in the way of a new lighting technique and this is a great help. If you have somebody who is working that way it makes the job so much easier for you. I don't think there is anything really different that has developed in our working relationship. He may be more demanding than he was before, but that makes it very easy for you when you go on to your next picture. To use an analogy in reference to our British game of Cricket: It's like practicing with five wickets and playing three. You defend five and then when you come to defend three, it's much easier.

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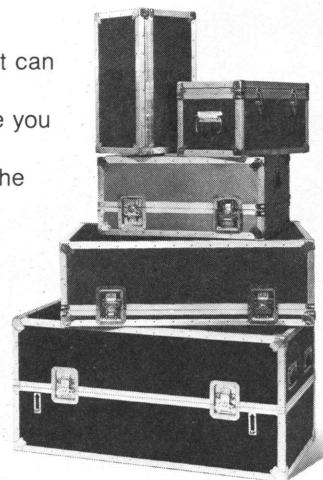
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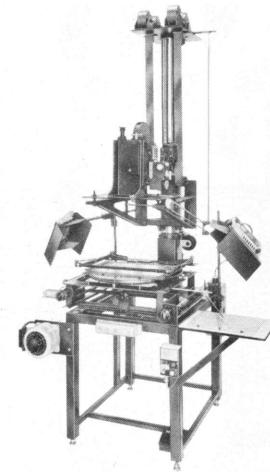
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directly onto 35mm mag track.

The basic idea of STAR TREK, from the very beginning, was predicated upon the existence of a highly technical future civilization. The very nature of the script itself attracted high technology behind the scenes, as a reflection of what the film was conveying. In the course of pioneering the "digital age" in terms of the film, video and audio worlds, many new advancements have been developed—all seeking the marriage of efficient audio-visual interlocking systems for the motion picture industry.

Now, as the result of developments by the TRAC Corporation, BTX Corporation and Roland Corporation, the introduction of the audio and video time-coding systems makes possible a much more efficient way of composing sound effects and music directly to the picture, thus by-passing and eliminating traditional cost-effective approaches.

As a result, one synthesist will be able to create the musical score, sound effects and all dialogue special effects with ease—not to mention the versatility involved, as demonstrated in terms of a new development presented by the Roland Corporation during the AES Convention in Los Angeles last June. This computer-editor is a fully automated system, in addition to being a master clock for digital sequencing storage, as well as an audio-to-video time-coding interface. All of these new tools, offered within the last few months, will allow tremendous flexibility to be used in the production of our future films.

Clearly film has come a long way from the early silent era. We are now beyond simple storytelling. We are in an age of film that is a sensory experience, so much so that when we go to see films such as STAR TREK and STAR WARS, we leave the theaters having experienced a profound change in our lives. Synthesized sound is assuming a major role in creating the believability of these future films. The technology available today has given us a jump in our level of consciousness. That is the purpose of media.

Glossary of Terms

Predubs—Elemental mixes done by the re-recording mixers to make for easy handling in following the sequence of events for the final mix.

Foley—The sounds of footsteps, clicks, switches, beeps, etc., later matched to the picture in the dubbing studio.

Homebrew effects—Sound effects created often times by the sound editors, consisting of acoustically-created sounds using technical tricks such as variable speed techniques.

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"THEY WENT THATAWAY"
Continued from Page 807

We wanted something entertaining that would tie in with the western motif. While we were filming, little things kept going wrong. The sheriff, for example, went to shoot off his gun to stop the barroom brawl and it did not go off, causing a comical and confused reaction. The gambler reached for a breakaway bottle to knock off the competition, and it shattered in his hands. The stunt rider galloped into town, right past the saloon where he was supposed to stop. While this was going on, we started to think this stuff was too good to waste and came up with the idea for a film titled, THE WAY IT REALLY HAPPENED. It ended up being shown at the dinner during the last day of the meeting, with an appropriate introduction by the sales director.

Another unplanned event filmed was the stagecoach scene. When we arrived at Wild West City and saw a stagecoach sitting there we all started trying to figure out how we could work the stagecoach into one of the films. It was not until we decided to do the "out takes" film that we found a way to use the stagecoach and we resorted to one of the oldest Hollywood gag shots. We had the stagecoach pull up in front of the saloon. Inside the saloon were twenty people who appeared in the film. As the stagecoach stopped, the four people in the stagecoach plus the twenty people in the saloon came pouring out of the stagecoach. We used the scene to open THE WAY IT REALLY HAPPENED film.

Despite the poor weather and a cast with no acting experience, we finished shooting in one day and delivered the finished film less than three weeks later—on time and on budget. None of this would have been possible, however, if we had not had the enthusiastic and wholehearted cooperation of the agency staff and the Bard Parker executives who turned out to be mighty fine actors.

How about the bottom line? Did the films achieve their objectives? According to agency President Len Barmak, "the audience really got into the spirit of the film. They responded to the sight gags with hilarious laughter."

Probably the greatest rewards to the agency and the participants in the film was the standing ovation given when the principal characters in the film appeared live on stage dressed in the same costumes they wore in the film.

The films really set the pace and established great motivation and enthusiasm which lasted throughout the five days of the sales meeting.

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FILMING "CHRISTMAS
LILIES" IN UTAH
Continued from Page 818

ner has added a new dimension to the process of making a film for TV release. Hauser's film, for example, was flown to DeLuxe Laboratory, in Los Angeles, daily and work prints were returned by air the next day. The work prints were transferred to videotape with one copy sent to network officials wanting to keep a finger on the pulse of production. A time-coded tape was also available to Nelson each night.

"We believe that this makes a lot of sense," Callister says. "If you are producing a film that will be seen on television, why not look at the dailies on a TV monitor in the comfort of your own room at night?"

There is still a lot of unexplored ground involving use of the flying spot scanner. "Remember, we can time-code and synchronize the videotape for double-system sound," Brennan notes. "For a TV movie or even a theatrical film—that would allow us to rough-edit the tape and just conform the film, leaving room for opticals and other visual effects that can best be done with film."

Much ado has been made during recent years about advancements in electronic technology, and in some ways this article is no exception. However, Hauser points out that developments in film technology during the past several years are what made it possible to shoot CHRISTMAS LILIES OF THE FIELD the way that he did in the time he did.

"There were times when the dust was so thick that we couldn't see across the compound," he says. "However, we didn't have a single problem with the Panaflex camera under the worst of these conditions," he notes.

Hauser also cited the faster and sharper lenses that have become available during the past several years, as well as the compactness of the camera and the very broad latitude of the film.

"We did scenes up here at night with just a few small lights on people's eyes and faces. The film just poked through and gave us the sharp, clear images that we needed," he continues. "There was also a situation at the Federal Building where I used just natural overhead light and a few lamps on the floor for eyes and highlights. The result was very natural, and we were able to work fast."

Speed was particularly important since much of the cast consists of children.

"Give Ralph Nelson most of the credit," Hauser says. "The key was his rehearsals. He had the kids ready to perform."

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THE STEADICAM AND "THE SHINING"

Continued from Page 827

so that rigging pipes could be fastened anywhere on the frame, and Dennis (Winkle) Lewis, our very able grip, constructed an adapter for the Elemack head. The Steadicam arm was fastened to the Mitchell mount, and I could sit on the chair and easily trim the leveling head to remove any imbalance in the "float" of the Steadicam.

With Stanley's BL in the underslung mode we were now prepared to fly the camera smoothly over carpet or floor at high speed and with a lens height of anything down to one inch. The results, as can be seen, were spectacular. In addition, the whole rig wasn't so massive that it would be dangerous if the little boy made a wrong turn and we had to stop suddenly. Of course, we immediately constructed a platform so that the sound man and our ace focus-puller, Doug Milsome, could ride on the back.

Now the entire contraption got to be quite difficult on the high speed corners. Dennis had to enlist relays of runners to get us around the course. Finally we had an explosive tire blow-out and the chair "plummeted in", barely avoiding a serious crash. Afterward we switched to solid tires and carried no more than two people.

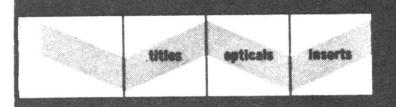
Stanley contemplated this arrangement and decided that the chair should have a super-accurate speedometer, and while we're at it so should the Moviola dolly and the Elemack. Then we could precisely repeat the speed of any traveling shot, etc. (More control over a capricious universe!) I was afraid that I would be lumbered with some kind of outboard wheel to precisely regulate my own speed, so I was happy that nothing came of this particular idea. (Although I would have enjoyed knowing how many miles I didn't run because I had the wheelchair rig!)

We used this set-up frequently in the weeks to come. In the fall I took a leave of absence for a month due to a prior commitment to shoot on ROCKY II. An English operator named Ray Andrew very capably took over for me on this occasion and several others when I was required to commute back and forth from England to the U.S. Ray made a shot from the wheelchair in which the lens is one inch above the floor, moving slowly beside Jack's head as he is being dragged toward the larder by Wendy. We also used the wheelchair with the lens at normal height to shoot a number of ordinary tracking shots through the corridors. The wheelchair was particularly useful when the camera had to move very slowly. If we needed to crab we mounted



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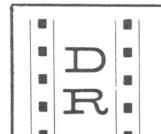
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the arm on the Elemenck dolly or the
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The operating technique in the chair
also involves two hands: one for the arm,
and one for the handle. You can easily jib
over to the left and right, as well as boom
up and down to compensate for slight
variations in the course. We used this
ability again to straighten out the cam-
era's path and cut corners in order to
make these shots easier to watch. The
only tricky aspect of shooting from the
chair is that starts and stops tend to be
dramatic. It is a little like carrying a full
punch bowl in a decelerating rickshaw!

WIRELESS FOCUS AND IRIS PULLING

I brought to England the first prototype
of Cinema Products' sensational
3-channel wireless servo-lens-control,
and Doug Milsome appeared to enjoy
using it. He has a marvelous eye and
something like a physicist's knowledge
of optics. I don't think that we shot a soft
frame in all the time I was on THE SHIN-
ING. He made up focus and iris strips on
the servo-control for all the lenses. A
surprising percentage of my shots on the
picture involved iris pulls. We would
commonly dial anything from 1/3 to 1 1/2
stop changes and the results were un-
detectable on screen. Since we were
often rushing through narrow spaces
Milsome had to train his eye to pull focus
from positions other than just abeam of
the lens. We would get tangled in fan-
tastic shifting choreographies and a
wrong turn would find Doug outside the
studio front gate, still gamely dialing the
servo!

Kubrick has a fanatical concern for the
sharpness of his negative. He res-
urrected the "harp test" for his lenses
and then went beyond that to invent a
bizarre variation on the harp test which
positions one focus chart every inch for
fifteen feet out from the lens.

The cameras were steady-tested
nearly every week, and the dailies pro-
jectors (which belonged to Kubrick) were
frequently torn down and rebuilt to cure
unsteadiness due to wear. In addition,
we shot with matte-perf film and our
prints were made on the one and only
captive printer at Rank that seemed to
produce steady prints!

All this produced so much data that the
results were subject at times to some
confusion. The depth on one of the two
BL's was packed by a few tenths on the
theory that the film "liked" the image to
bite somewhat into the emulsion. Lenses
which were front-focused "preferred"
one camera; back-focused lenses "pre-
ferred" the other. A master chart ex-
plained the feelings of each individual
lens. It would be an exaggeration to say
that I understood this system completely,

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but I must point out that I never saw sharper dailies, so the lenses obviously prefer the long-suffering Milsome as focus-puller.

THE MAZE

The giant Hedge Maze set must be one of the most intriguing creations in the history of motion pictures. It must also be one of the most pernicious sets ever to work on. And folks, every frame was shot with the Steadicam. In its benign "summer" form, the Maze was constructed on the old MGM lot outdoors at Borehamwood.

It was beautiful. The "hedges" consisted of pine boughs stapled to plywood forms. It was lined with gravel paths, and contained a center section (although built to one side of the set) which was wider than the rest. It was exceedingly difficult to find one's way in or out without reference to the map which accompanied each call sheet. Most of the crew got lost at various times and it wasn't much use to call out "Stanley" as his laughter seemed to come from everywhere! It was amusing to be lost carrying nothing more than a walkie-talkie. It was positively hilarious if you happened to be wearing the Steadicam.

We determined by testing that the 9.8mm Kinoptik looked best, and that the ideal lens height was about 24 inches. This combination permitted a tremendous sense of speed and gave the correct appearance of height to the walls. The distortion was negligible when the camera was held level fore-and-aft. Much of the shooting consisted of fluid moves ahead of or behind Wendy and Danny as they learn their way through the Maze. Some of the best moments came as we followed them right into a dead end and back out again in one whirling move. I also made some tripod-type shots in the center of the maze since it would have been time-consuming to lug in the equipment to make a conventional shot.

Stanley mostly remained seated at the video screen, and we sent a wireless image from my camera out to an antenna on a ladder and thence to the recorder. For the first time I found the ritual of playback a burden, since I had to walk all the way out of the maze and back. We had made an early attempt to leave certain passages open to the outside. However, we found that we were constantly getting disoriented and a terrific shot would inadvertently wind up staring out one of the holes.

I discovered at this time that young Danny Lloyd weighed exactly as much as the camera, so we made a chair out of webbing and he would yell with delight as he swooped along riding suspended



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from the Steadicam arm. (I was sorry that I hadn't thought of that one before my own son weighed as much as a BNC!)

The maze was then struck and re-erected on stage 1 at the EMI Studios. Roy Walker's men proceeded to "snow" it in with two feet of dendritic dairy salt and Styrofoam snow crusted on the pine boughs. The quartz outdoor-type lights were turned on and a dense oil-smoke atmosphere was pumped in for eight hours a day. Now the maze became an unpleasant place in which to work. It was hot, corrosive and a difficult spot in which to breathe. The speed of the shots stepped up, since everything now happened at nearly a run. To lighten the load we switched to the Arri 11c from Joe Dunton Cameras and constructed a special underslung cage for it.

The "snow" was difficult to run on. I constantly had a fill light clattering around my legs, and I had to navigate by the sound of muffled curses ahead as the lighting and focus-pulling intrepids fell over one another in the salt. I think that the most difficult shots on the entire picture for me were the 50mm close-ups traveling ahead of Jack or Danny at high speed. Milsome deserves a lot of credit for keeping his feet and keeping them sharp.

For a special shot of the boy's running feet which required a lens height of three inches we made up a copy of my earliest "Steadicam": no arm, just camera, battery and magazine, connected in a balanced arrangement so I could run along "hand-held" with the lens right on the deck.

In the beginning we wore gas masks of various vintages. However, I found that I couldn't get enough air to support the exertion of getting from one end of the Maze to the other. We never measured the linear distance from the entrance to the center, but I am sure it was a hell of a long way. This was the only time on the picture that I sometimes had to call a halt to the shooting until I could get enough breath to move again.

Stanley, meanwhile, watched the deteriorating video pictures from outside the set, like a wrathful Neilson family suddenly given absolute power over the programming. The faster we had to move, the worse it got. I sometimes thought wistfully of breaking an ankle in the salt. It required enormous force to pull the camera around the turns and a degree of luck to find the right path while essentially looking backward. In addition, we were all acutely aware of the danger of fire and how difficult it would be to get out of the maze if the lights went out, with *real* smoke and burning Styrofoam—a genuine nightmare!

The footage, however, looked sensa-

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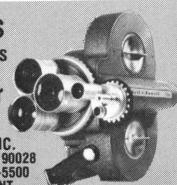
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tional and the sequence is tremendous in the picture, so it is all, as they say, worthwhile. Some of the best stuff was slow-moving. As Danny backs up stepping in his own footprints to fool Jack, I had to back up ahead of him also in his footprints! To accomplish this I had to wear special stilts with Danny-shoes nailed to the bottom so I wouldn't make the footprints any bigger!

As it turned out, there were very few stair-climbing shots in the picture. Ray Andrew shot one which worked extremely well as Wendy backs up the stairs swinging a baseball bat at Jack.

I made a "stairs" shot which is my all-time favorite. We are moving ahead of Wendy up three flights of stairs, starting rapidly, and smoothly slowing down until we are just barely moving ahead of her as she comes upon Harry Derwent and his strange doggy companion doing the unspeakable! A fabulous shot, despite the fact that we did it 36 times—multiplied by three flights equals climbing the Empire State Building with camera . . .

When I finally saw it on the silver screen I was glad to have made the climb, if for no other reason than . . .

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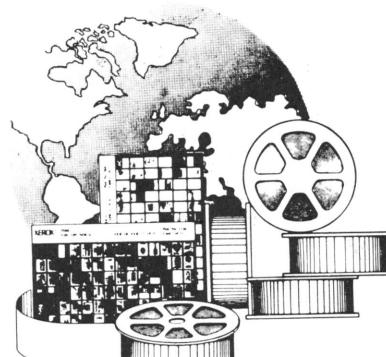
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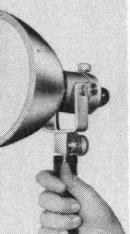
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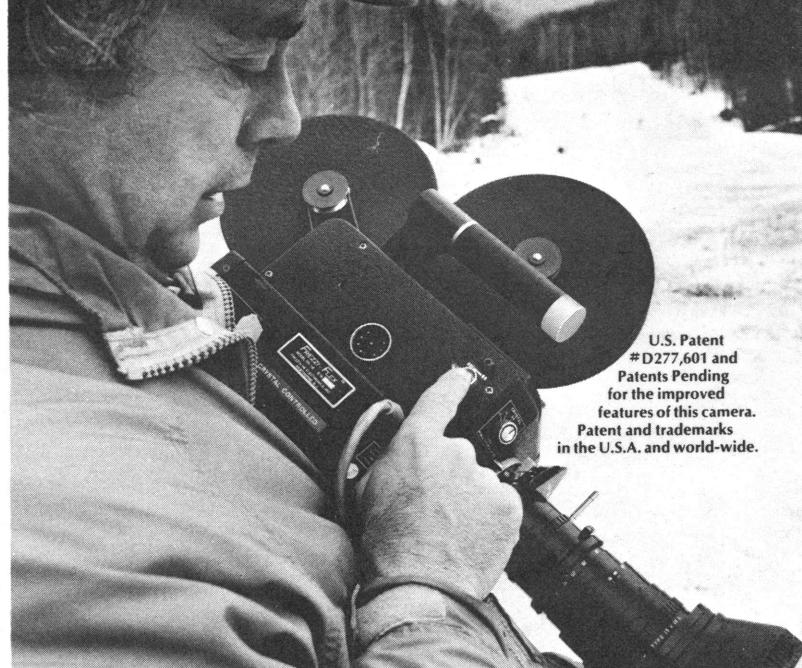
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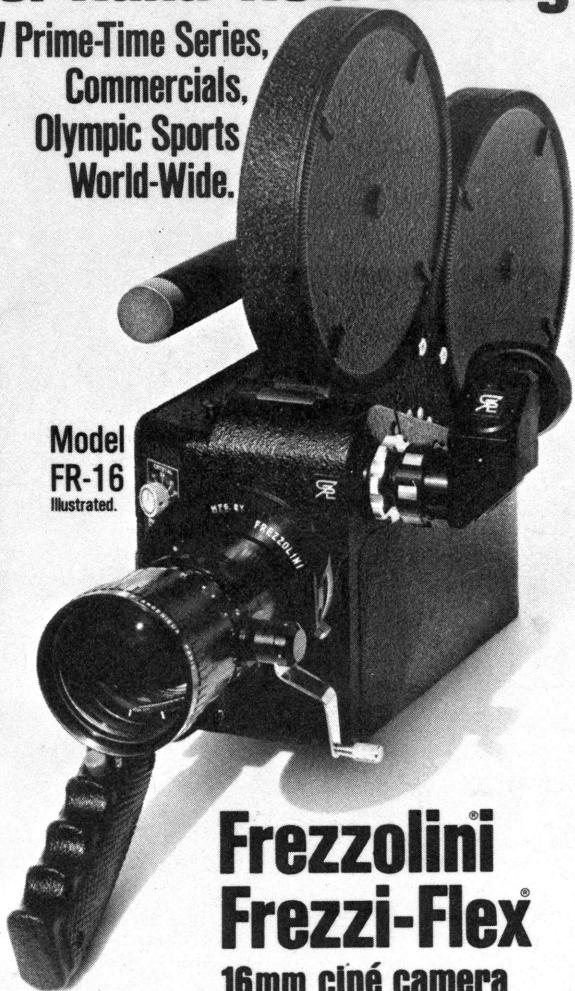
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Theories, speculation, wild guesses. Look at the facts, my good man. A virtual morass of clues. No clear motive. A menagerie of suspects. A thoroughly professional job, executed by a team of professionals.

It's elementary, my dear sir ...
PANAFLEX® shot JR!

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